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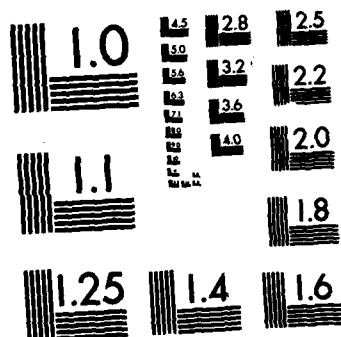
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EVALUATING $J_N(z)$ VIA SERIES REPRESENTATION

Joel Carroll

28 October 1982

Prepared for
Naval Sea Systems Command
(PMS-406)

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A N A C T I V I T Y O F T H E N A V A L M A T E R I A L C O M M A N D

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ADMINISTRATIVE INFORMATION

The work reported here was performed as part of the Advanced Lightweight Torpedo Target Modeling Program by members of the Weapons Technology Division under program element 63610N, project WT16, and subproject S0199-AS. Sponsorship was provided by the Naval Sea Systems Command (PMS-406).

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) An algorithm and subroutine for evaluating $J_N(z)$ were developed to be used in determining the scattering of plane elastic waves from a single, hollow cylindrical cavity. Two series were developed for computation purposes: one for the real part of $J_N(z)$ and one for the imaginary part of $J_N(z)$. The subroutine utilizes double-precision arithmetic. The output includes the complex number EZ where the real and imaginary parts represent the magnitudes of upper bounds of errors in respective parts of $J_N(z)$. Computational studies strongly suggest that for $z \leq 10$, the magnitudes of the error in the real and imaginary parts of $J_N(z)$ are less than 10^{-6}. From the same studies, computational times were always less than 0.04 second.		

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OBJECTIVE

Develop an algorithm and subroutine for evaluating $J_N(z)$ to be used in determining the scattering of plane elastic waves from a single, hollow cylindrical cavity. Optimal accuracy and computation time are both essential.

RESULTS

1. Two series were developed for computational purposes: one for the real part of $J_N(z)$ and one for the imaginary part of $J_N(z)$.
2. A subroutine was developed for evaluating $J_N(z)$ by utilizing double-precision arithmetic. Included in the output is the complex number EZ where the real and imaginary parts represent the magnitudes of upper bounds of errors in respective parts of $J_N(z)$.
3. Computational studies strongly suggest that for $|z| \leq 10$, the magnitudes of the errors in the real and imaginary parts of $J_N(z)$ are less than 10^{-6} . From the same studies, computational times were always less than 0.04 second.

RECOMMENDATIONS

1. Although the motivation for designing the algorithm and subroutine for computing $J_N(z)$ was for use in the specified scattering problem, satisfactory usage in a wide range of scientific problems is projected.
2. Subroutine JNZ can also be used for Bessel functions of real arguments by setting the imaginary part of z to zero. Computational studies show a high degree of accuracy (magnitude of the maximum error less than 10^{-6}) for z taking on integer values from 1 to 10.

CONTENTS

INTRODUCTION . . . page 3

ALGORITHM . . . 3

COMPUTATIONAL RESULTS AND CONCLUSIONS . . . 4

TABLES 1 THROUGH 26 . . . 7

APPENDIX A: LISTING OF SUBROUTINE JNZ . . . A-1

APPENDIX B: LISTING OF PROGRAM FOR COMPUTING TABLES . . . B-1

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INTRODUCTION

Computational methods for evaluating Bessel functions of the first kind have been a necessary part of scientific research and technology for generations. Exhaustive tables [1] have been published for real arguments, while a similar publication for complex arguments [2] is much more limited in scope.

A recent need arose at NOSC for these functions with complex arguments in determining the scattering of plane elastic waves from a single hollow cylindrical cavity. To meet this need, priorities of accuracy and computational time were set as number one and number two goals, respectively.

ALGORITHM

Although some analysts will question the efficiency of the series representation for computational purposes (both in terms of accuracy and computational time), this study shows that the approach does reasonably well. Of course, no universal algorithm has been designed to successfully compute $J_N(z)$ for the entire domain of existence [3] of the complex numbers.

The series representation of the Bessel function is given by:

$$J_N(z) = \left(\frac{1}{2}z\right)^N \sum_{K=0}^{\infty} \frac{\left(-\frac{1}{4}z^2\right)^K}{K!(N+K)!}$$

$$= U + iV,$$

for $z = \rho (\cos \theta + i \sin \theta)$.

-
1. Harvard Computation Laboratory Annals, vol III-IX, Harvard University Press, Cambridge, MA, 1947-48.
 2. Tables of the Bessel Functions $J_0(z)$ and $J_1(z)$ for Complex Arguments, Columbia University Press, New York, 1943.
 3. Private consultation with Dr Gordon Martin.

The real and imaginary parts, U and V, are

$$U = \left(\frac{\rho}{2}\right)^N \sum_{K=0}^{\infty} \frac{(-1)^K \rho^{2K} \cos (N+2K)\theta}{2^{2K} \Gamma (K+1) \Gamma (N+K+1)},$$

$$V = \left(\frac{\rho}{2}\right)^N \sum_{K=0}^{\infty} \frac{(-1)^K \rho^{2K} \sin (N+2K)\theta}{2^{2K} \Gamma (K+1) \Gamma (N+K+1)}.$$

Thus we have two independent series representing the real and imaginary parts of the Bessel function.

COMPUTATIONAL RESULTS AND CONCLUSIONS

All programming for this report was done in ASCII Fortran for the UNIVAC 1100/82.

The subroutine for computing $J_N(z)$ is referenced by the statement

```
CALL JNZ (JN, NP1, Z, EZ)
```

where

J_N will contain the double-precision complex output $J_N(z)$

NP1 is the integer order of the Bessel function

Z is the double-precision complex argument

EZ is a double-precision complex number with the real and imaginary parts being upper bounds for the magnitudes of respective parts of the relative error in J_N .

Subroutine JNZ carries out the computations in double-precision arithmetic and uses double-precision system subroutines:

```
DREAL, DIMAG, DSQRT, DATAN2, DSIN, DCOS, DGAMMA, DCMPLX.
```

Since reference 1 was available for comparison of computations with real arguments, it was decided to compute $J_N(z)$ for $N = 1, 2, \dots, 27$, and $z = 1, 2, 3, \dots, 15$. In general, the comparisons showed the magnitudes of the differences to be less than 10^{-8} in the worse cases [12 values of $J_N(z)$] for $z = 1, 2, 3, 4$, and 5. For $N \geq 9$, the computations agreed for the 10 places of output with reference 1. For $z = 6, 7, 8, 9$, and 10, two values showed comparison differences greater than 10^{-8} but less than 10^{-7} . All other differences were significantly less than 10^{-8} . For these same cases ($z = 6$ to 10), the computations agreed with reference 1 for the 10 places of output for $N \geq 14$. The computations for $z = 11, 12, 13, 14$, and 15 showed significantly larger differences than the other computations.

In general, whenever differences were noted between reference 1 and the computations for $z = 1$ to 10, the magnitudes of the computations were less than the corresponding magnitudes of reference 1. For $z = 11$ to 15, the computational values were algebraically less than corresponding values given in reference 1.

Tables 1 through 26 represent some results for selected values for the argument z , where 'N' is the order of J_N , J_N is the computed complex values of the Bessel function, and the time of computation (TIME) is given in seconds. Listed under the heading BESL.EQ., are the complex values of the Bessel equation for the specified J_N as its solution. (Note that the value of the Bessel equation should be zero when satisfied.) Listed under the heading, REL.ERROR, is the output 'EZ' from the subroutine JNZ.

The following expression is the Bessel equation given in terms of its solution $J_N(z)$.

$$\frac{z^2}{4} \left[J_{N-2}(z) + \frac{2}{z} J_{N-1}(z) - 2J_N(z) - \frac{2}{z} J_{N+1}(z) + J_{N+2}(z) \right] + (z^2 - N^2) J_N(z) = 0.$$

Therefore, the values listed under the heading, BESL.EQ., represent 'complex zeros' and along with values listed under REL.ERROR give some indications of the quality of the computations. From this standpoint, tables 16, 17, and 18 are the worst results.

Although the number of computations carried out here has not been exhaustive, it is conceivable that for $|z| \leq 10$, JNZ can carry sufficient accuracy for many needs. Additional computational studies strongly suggest that for $|z| \leq \sqrt{57}$, the magnitudes of the real and imaginary parts of both EZ and the error in the computational value of the Bessel equation are less than 10^{-9} .

TABLES 1 THROUGH 26

TABLE 1 FOR Z=(1.0, 1.0)

N	JN	BESL. EQ.	TIME	REL. ERROR
1	(.61416033, .36502803)	(.0000000000, .0000000000)	.02280	(.3857303-035, .6489920-035)
2	(.04157989, .24739764)	(.0000000000, .0000000000)	.02320	(.2120380-035, .3563702-036)
3	(-.03620528, .04660748)	(.0000000000, .0000000000)	.02340	(.8609542-037, .6688001-037)
4	(-.01037328, .00104063)	(.0000000000, .0000000000)	.02400	(.1011816-037, .1008602-036)
5	(-.00112531, -.00095183)	(.0000000000, .0000000000)	.03060	(.2997840-038, .3544233-038)
6	(-.00001239, -.00017322)	(.0000000000, .0000000000)	.02520	(.8368335-038, .5987284-039)
7	(.00001160, -.00001315)	(.0000000000, .0000000000)	.02600	(.2633186-039, .2323028-039)
8	(.00000155, -.00000009)	(.0000000000, .0000000000)	.02660	(.5583415-040, .1003999-038)
9	(.00000009, .00000008)	(.0000000000, .0000000000)	.02700	(.2602364-040, .2876534-040)
10	(.00000000, .00000001)	(.0000000000, .0000000000)	.02780	(.1573043-039, .7155059-041)
11	(.00000000, .00000000)	(.0000000000, .0000000000)	.02820	(.4147570-041, .3815582-041)
12	(.00000000, .00000000)	(.0000000000, .0000000000)	.03480	(.1162835-041, .3021894-040)
13	(.00000000, .00000000)	(.0000000000, .0000000000)	.02940	(.6879693-042, .7389523-042)
14	(.00000000, .00000000)	(.0000000000, .0000000000)	.02960	(.6823323-041, .2275278-042)
15	(.00000000, .00000000)	(.0000000000, .0000000000)	.03020	(.1556886-042, .1462500-042)
16	(.00000000, .00000000)	(.0000000000, .0000000000)	.03060	(.5170504-043, .1757467-041)
17	(.00000000, .00000000)	(.0000000000, .0000000000)	.03100	(.3557108-043, .3760424-043)
18	(.00000000, .00000000)	(.0000000000, .0000000000)	.03140	(.5050759-042, .1329452-043)
19	(.00000000, .00000000)	(.0000000000, .0000000000)	.03800	(.1017708-043, .9680532-044)
20	(.00000000, .00000000)	(.0000000000, .0000000000)	.03220	(.3792511-044, .1592555-042)
21	(.00000000, .00000000)	(.0000000000, .0000000000)	.03260	(.2898050-044, .3032866-044)
22	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.5437397-043, .1182229-044)
23	(.00000000, .00000000)	(.0000000000, .0000000000)	.03320	(.9817957-045, .9417167-045)
24	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.3979072-045, .1989272-043)
25	(.00000000, .00000000)	(.0000000000, .0000000000)	.03920	(.3286305-045, .3415196-045)
26	(.00000000, .00000000)	(.0000000000, .0000000000)	.03320	(.7732323-044, .1432075-045)
27	(.00000000, .00000000)	(.0000000000, .0000000000)	.03320	(.1265357-045, .1220354-045)

TABLE 2 FOR Z=(1.0, 9.0)

N	JN	BESL. EQ.	TIME	REL. ERROR
1	(836.40934830, 598.33271369)	(-.0000000056, .0000000078)	.02260	(.4740937-010, .6627356-010)
2	(-488.54308327, 713.12808864)	(-.0000001009, .0000001772)	.02320	(.1934209-010, .1325070-010)
3	(-547.16010271, -349.06364939)	(-.0000000443, -.0000000190)	.02360	(.3909659-011, .6128422-011)
4	(218.63579445, -378.34436559)	(.0000000031, -.0000000103)	.02400	(.2109549-011, .1219056-011)
5	(236.28561531, 120.17911128)	(.0000000023, .0000000004)	.02460	(.4017241-012, .7898347-012)
6	(-57.91657288, 133.66248430)	(.0000000000, .0000000005)	.02520	(.3226350-012, .1397992-012)
7	(-68.71793934, -24.33838345)	(-.0000000001, .0000000000)	.02560	(.5129911-013, .1448399-012)
8	(8.78623793, -32.22683810)	(.0000000000, .0000000000)	.02640	(.7266310-013, .1981067-013)
9	(13.83885543, 2.62072892)	(.0000000000, .0000000000)	.02700	(.8033787-014, .4242271-013)
10	(-.57090277, 5.46194225)	(.0000000000, .0000000000)	.03380	(.3255664-013, .3413395-014)
11	(-1.98847068, -.03534667)	(.0000000000, .0000000000)	.02820	(.1516119-014, .8529116-013)
12	(-.04793863, -.66999630)	(.0000000000, .0000000000)	.02880	(.9818515-014, .7025206-015)
13	(.20957157, -.03447243)	(.0000000000, .0000000000)	.02920	(.3399649-015, .2060702-014)
14	(.01601561, .06102032)	(.0000000000, .0000000000)	.02980	(.6478269-015, .1700309-015)
15	(-.01657697, .00608994)	(.0000000000, .0000000000)	.03020	(.8855727-016, .2410550-015)
16	(-.00202811, -.00420959)	(.0000000000, .0000000000)	.03680	(.9931194-016, .4784679-016)
17	(.00100062, -.00060960)	(.0000000000, .0000000000)	.03100	(.2680529-016, .4399927-016)
18	(.00016815, .00222280)	(.0000000000, .0000000000)	.03140	(.2063484-016, .1557341-016)
19	(-.00004647, .00004302)	(.0000000000, .0000000000)	.03200	(.9391424-017, .1014503-016)
20	(-.00001028, -.00000907)	(.0000000000, .0000000000)	.03240	(.5194819-017, .5890185-017)
21	(.00000165, -.00000231)	(.0000000000, .0000000000)	.03260	(.3856329-017, .2757593-017)
22	(.00000049, .00000028)	(.0000000000, .0000000000)	.03300	(.1512256-017, .2652751-017)
23	(-.00000004, .00000010)	(.0000000000, .0000000000)	.03920	(.1940129-017, .8544748-018)
24	(-.00000002, -.00000001)	(.0000000000, .0000000000)	.03300	(.4964202-018, .1544112-017)
25	(.00000000, .00000000)	(.0000000000, .0000000000)	.03320	(.1411360-017, .2960522-018)
26	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.1810115-018, .1767793-017)
27	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.3676066-016, .1133574-018)

TABLE 3 FOR Z=(2.0, -8.0)

N	JN	BESL. EQ.	TIME	REL. ERROR
1	(375.22488837, 124.04942485)	(-.0000000006, -.0000000001)	.02260	(.3991673-011, .1207402-010)
2	(118.19933724, -305.96493159)	(-.00000000050, .00000000008)	.02300	(.2749808-011, .1062297-011)
3	(-217.33558677, -104.42208163)	(-.00000000001, .00000000013)	.02340	(.3093054-012, .6416816-012)
4	(-82.84297140, 134.12415005)	(.00000000002, .00000000001)	.02360	(.1588040-012, .9808669-013)
5	(71.60862874, 58.01084974)	(.00000000000, .00000000000)	.02440	(.3443131-013, .4250203-013)
6	(35.65627427, -32.81668984)	(.00000000000, .00000000000)	.02520	(.1239594-013, .1346855-013)
7	(-12.69461688, -19.25494131)	(.00000000000, .00000000000)	.02560	(.5981486-014, .3943542-014)
8	(-9.16944848, 3.97940386)	(.00000000000, .00000000000)	.02620	(.1355746-014, .3146988-014)
9	(.88893974, 3.86746364)	(.00000000000, .00000000000)	.02680	(.2234045-014, .5134971-015)
10	(1.45014064, -.04946248)	(.00000000000, .00000000000)	.02760	(.2091293-015, .6131251-014)
11	(.08046646, -.48446360)	(.00000000000, .00000000000)	.02800	(.5549789-015, .9217863-016)
12	(-.14416832, -.05574784)	(.00000000000, .00000000000)	.02860	(.4404007-016, .1138911-015)
13	(-.02482667, .03804868)	(.00000000000, .00000000000)	.02900	(.3514816-016, .2293409-016)
14	(.00879902, .00890348)	(.00000000000, .00000000000)	.03560	(.1319015-016, .1303539-016)
15	(.00274380, -.00173140)	(.00000000000, .00000000000)	.03020	(.5450118-017, .8636960-017)
16	(-.00026720, -.00074719)	(.00000000000, .00000000000)	.03040	(.6992625-017, .2500563-017)
17	(-.00018233, .00002225)	(.00000000000, .00000000000)	.03080	(.1243689-017, .1018269-016)
18	(-.00000414, .00004013)	(.00000000000, .00000000000)	.03140	(.6452408-017, .6650936-018)
19	(.00000798, .00000272)	(.00000000000, .00000000000)	.03160	(.3831949-018, .1123324-017)
20	(.00000089, -.00000143)	(.00000000000, .00000000000)	.03200	(.3841909-018, .2389589-018)
21	(-.00000023, -.00000023)	(.00000000000, .00000000000)	.03860	(.1636692-018, .1636211-018)
22	(-.00000005, .00000003)	(.00000000000, .00000000000)	.03280	(.7903741-019, .1275196-018)
23	(.00000000, .00000001)	(.00000000000, .00000000000)	.03300	(.1248349-018, .4183074-019)
24	(.00000000, .00000000)	(.00000000000, .00000000000)	.03300	(.2388668-019, .2623761-018)
25	(.00000000, .00000000)	(.00000000000, .00000000000)	.03280	(.1018890-018, .1463228-019)
26	(.00000000, .00000000)	(.00000000000, .00000000000)	.03300	(.9617554-020, .2429949-019)
27	(.00000000, .00000000)	(.00000000000, .00000000000)	.03920	(.9741434-020, .6835184-020)

TABLE 4 FOR Z=(2.0, -2.0)

N	JN	BESL. EQ.	TIME	REL. ERROR
1	(1.61701879, .27260958)	(.0000000000, .0000000000)	.02280	(.5033851-025, .2985893-024)
2	(.64455012, -.83518078)	(.0000000000, .0000000000)	.02320	(.9399832-026, .7254313-026)
3	(-.13728788, -.46324024)	(.0000000000, .0000000000)	.02360	(.3120539-026, .9248164-027)
4	(-.15562160, -.06561140)	(.0000000000, .0000000000)	.02380	(.1853906-027, .4397220-027)
5	(-.04273250, .02077424)	(.0000000000, .0000000000)	.03040	(.4340018-028, .8927392-028)
6	(-.00314526, .01071575)	(.0000000000, .0000000000)	.02520	(.3625602-028, .1064178-028)
7	(.00114945, .00193723)	(.0000000000, .0000000000)	.02580	(.5845875-029, .3468636-029)
8	(.00038803, .0008765)	(.0000000000, .0000000000)	.02640	(.9796054-030, .4336761-029)
9	(.00005207, -.00003452)	(.0000000000, .0000000000)	.02700	(.3971060-030, .5989809-030)
10	(.00000160, -.00000868)	(.0000000000, .0000000000)	.02780	(.6783323-030, .1246924-030)
11	(-.00000066, -.00000092)	(.0000000000, .0000000000)	.02820	(.8309070-031, .5916235-031)
12	(-.00000013, -.00000002)	(.0000000000, .0000000000)	.03480	(.2018514-031, .1301766-030)
13	(-.00000001, .00000001)	(.0000000000, .0000000000)	.02920	(.1079858-031, .1442669-031)
14	(.00000000, .00000000)	(.0000000000, .0000000000)	.02980	(.2937341-031, .3939656-032)
15	(.00000000, .00000000)	(.0000000000, .0000000000)	.03000	(.2984018-032, .2317835-032)
16	(.00000000, .00000000)	(.0000000000, .0000000000)	.03080	(.8937595-033, .7562080-032)
17	(.00000000, .00000000)	(.0000000000, .0000000000)	.03100	(.5681583-033, .7108556-033)
18	(.00000000, .00000000)	(.0000000000, .0000000000)	.03760	(.2172516-032, .2295302-033)
19	(.00000000, .00000000)	(.0000000000, .0000000000)	.03180	(.1903294-033, .1556192-033)
20	(.00000000, .00000000)	(.0000000000, .0000000000)	.03220	(.6542024-034, .6848427-033)
21	(.00000000, .00000000)	(.0000000000, .0000000000)	.03260	(.4683933-034, .5623558-034)
22	(.00000000, .00000000)	(.0000000000, .0000000000)	.03280	(.2337779-033, .2037973-034)
23	(.00000000, .00000000)	(.0000000000, .0000000000)	.03320	(.1807736-034, .1529029-034)
24	(.00000000, .00000000)	(.0000000000, .0000000000)	.03320	(.6855765-035, .8551468-034)
25	(.00000000, .00000000)	(.0000000000, .0000000000)	.03920	(.5356938-035, .6251668-035)
26	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.3323565-034, .2466401-035)
27	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.2304899-035, .1997092-035)

TABLE 5 FOR Z=(3.0, 3.0)

N	JN	BESL. EQ.	TIME	REL. ERROR
1	(1.63645140, -3.27863344)	(.0000000000, .0000000000)	.02280 (	.7242798-019, .3615069-019)
2	(2.81910682, .45706761)	(.0000000000, .0000000000)	.02340 (	.4694081-020, .2895231-019)
3	(.54766488, 1.70394064)	(.0000000000, .0000000000)	.02360 (	.2562852-020, .8237282-021)
4	(-.56750130, .69920815)	(.0000000000, .0000000000)	.02400 (	.2498380-021, .2027771-021)
5	(-.37205574, -.01499470)	(.0000000000, .0000000000)	.02460 (	.3674522-022, .9117401-021)
6	(-.07758278, -.10410641)	(.0000000000, .0000000000)	.02540 (	.1625257-022, .1211183-022)
7	(.00867736, -.03805257)	(.0000000000, .0000000000)	.02580 (	.1284383-022, .2928858-023)
8	(.00904063, -.00493009)	(.0000000000, .0000000000)	.02660 (	.1046044-023, .1918199-023)
9	(.00228407, .00079732)	(.0000000000, .0000000000)	.02700 (	.3378102-024, .9677122-024)
10	(.00020355, .00046987)	(.0000000000, .0000000000)	.03400 (	.2978224-024, .1290180-024)
11	(-.00003935, .00009040)	(.0000000000, .0000000000)	.02820 (	.1167016-024, .5080415-025)
12	(-.00001638, .00000590)	(.0000000000, .0000000000)	.02880 (	.2051264-025, .5689620-025)
13	(-.00000254, -.00000127)	(.0000000000, .0000000000)	.02920 (	.9358693-026, .1869803-025)
14	(-.00000013, -.00000041)	(.0000000000, .0000000000)	.02980 (	.1280017-025, .3958631-026)
15	(.00000003, -.00000005)	(.0000000000, .0000000000)	.03020 (	.3671314-026, .2025699-026)
16	(.00000001, .00000000)	(.0000000000, .0000000000)	.03660 (	.8913030-027, .3288601-026)
17	(.00000000, .00000000)	(.0000000000, .0000000000)	.03100 (	.5002759-027, .8433107-027)
18	(.00000000, .00000000)	(.0000000000, .0000000000)	.03140 (	.9433886-027, .2276868-027)
19	(.00000000, .00000000)	(.0000000000, .0000000000)	.03200 (	.2198095-027, .1379365-027)
20	(.00000000, .00000000)	(.0000000000, .0000000000)	.03240 (	.6464366-028, .2970573-027)
21	(.00000000, .00000000)	(.0000000000, .0000000000)	.03260 (	.4176110-028, .6362117-028)
22	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300 (	.1013182-027, .2007912-028)
23	(.00000000, .00000000)	(.0000000000, .0000000000)	.03920 (	.2012091-028, .1370366-028)
24	(.00000000, .00000000)	(.0000000000, .0000000000)	.03320 (	.6739441-029, .3703726-028)
25	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300 (	.4823376-029, .6867126-029)
26	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300 (	.1438715-028, .2420254-029)
27	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300 (	.2504348-029, .1805657-029)

TABLE 6 FOR Z=(3.0, 7.0)

N	JN	BESL. EQ.	TIME	REL. ERROR
1	(47.81936364, -143.39837954)	(-.00000000001, .00000000000)	.02280	(.1936095-011, .6456338-012)
2	(121.55481076, 29.07368380)	(-.00000000003, -.00000000001)	.02300	(.1526472-012, .6392059-012)
3	(-8.63452095, 90.73199178)	(.00000000000, -.00000000001)	.02340	(.4091444-012, .3893626-013)
4	(-58.53201287, 5.33710468)	(.00000000000, .00000000000)	.02380	(.1094425-013, .1200256-012)
5	(-10.43255571, -32.00986708)	(.00000000000, .00000000000)	.02440	(.1062797-013, .3463834-014)
6	(14.50326517, -9.30291697)	(.00000000000, .00000000000)	.02500	(.1265702-014, .1973231-014)
7	(5.96139227, 5.23091388)	(.00000000000, .00000000000)	.02580	(.4885648-015, .5567911-015)
8	(-1.34795420, 3.01812283)	(.00000000000, .00000000000)	.03240	(.3291082-015, .1469863-015)
9	(-1.24884132, -.13021101)	(.00000000000, .00000000000)	.02700	(.5202562-016, .4989727-015)
10	(-.09763231, -.42635367)	(.00000000000, .00000000000)	.02760	(.9385365-016, .2149190-016)
11	(.11871283, .07518031)	(.00000000000, .00000000000)	.02800	(.1049719-016, .1657550-016)
12	(.03310263, .02560061)	(.00000000000, .00000000000)	.02860	(.4943041-017, .6391552-017)
13	(-.00346641, .01107691)	(.00000000000, .00000000000)	.02900	(.5991552-017, .1874999-017)
14	(-.00300578, .00017328)	(.00000000000, .00000000000)	.02960	(.8487582-018, .1472316-016)
15	(-.00030124, -.00066848)	(.00000000000, .00000000000)	.03620	(.1007785-017, .4541389-018)
16	(.00011800, -.00011989)	(.00000000000, .00000000000)	.03050	(.2968762-018, .2921981-018)
17	(.00003353, .00001433)	(.00000000000, .00000000000)	.03100	(.1169954-018, .2737066-018)
18	(-.00000021, .00000749)	(.00000000000, .00000000000)	.03140	(.2081042-017, .5698850-019)
19	(-.00000137, .00000050)	(.00000000000, .00000000000)	.03180	(.3288167-019, .8957239-019)
20	(-.00000018, -.00000020)	(.00000000000, .00000000000)	.03820	(.2552859-019, .2299890-019)
21	(.00000002, -.00000004)	(.00000000000, .00000000000)	.03240	(.2200357-019, .1073724-019)
22	(.00000001, .00000000)	(.00000000000, .00000000000)	.03280	(.5565224-020, .8085115-019)
23	(.00000000, .00000000)	(.00000000000, .00000000000)	.03300	(.1039430-019, .3422541-020)
24	(.00000000, .00000000)	(.00000000000, .00000000000)	.03300	(.2543368-020, .2981362-020)
25	(.00000000, .00000000)	(.00000000000, .00000000000)	.03300	(.1315283-020, .2557021-020)
26	(.00000000, .00000000)	(.00000000000, .00000000000)	.03300	(.8493679-020, .7199387-021)
27	(.00000000, .00000000)	(.00000000000, .00000000000)	.03880	(.4679409-021, .1476276-020)

TABLE 7 FOR Z=(4.0, -6.0)

N	JN	BESL. EQ.	TIME	REL. ERROR
1	(-32.22960124, 47.40785875)	(.0000000000, .0000000000)	.02280	(.4249562-012, .2889008-012)
2	(35.84847449, 31.83102460)	(.0000000000, .0000000000)	.02320	(.7250142-013, .8165195-013)
3	(28.56865896, -21.06824757)	(.0000000000, .0000000000)	.02360	(.1640095-013, .2223978-013)
4	(-8.07722973, -21.77652881)	(.0000000000, .0000000000)	.02380	(.9959759-014, .3694219-014)
5	(-13.43785066, .21140240)	(.0000000000, .0000000000)	.03080	(.9811388-015, .6236635-013)
6	(-2.50350432, 6.43393374)	(.0000000000, .0000000000)	.02520	(.8255735-015, .3212384-015)
7	(2.21839996, 2.26122276)	(.0000000000, .0000000000)	.02600	(.1399667-015, .1373160-015)
8	(1.23980597, -.41520159)	(.0000000000, .0000000000)	.02660	(.3611956-016, .1978542-015)
9	(.07404110, -.48336754)	(.0000000000, .0000000000)	.02700	(.8387291-016, .1284745-016)
10	(-.13337033, -.10029888)	(.0000000000, .0000000000)	.02760	(.6217893-017, .8268112-017)
11	(-.04776726, .02128389)	(.0000000000, .0000000000)	.02820	(.2235557-017, .5017242-017)
12	(-.00149491, .01506243)	(.0000000000, .0000000000)	.03480	(.8881257-017, .8814440-018)
13	(.00329607, .00238392)	(.0000000000, .0000000000)	.02920	(.4841090-018, .6693430-018)
14	(.00093530, -.00040637)	(.0000000000, .0000000000)	.02960	(.1984253-018, .4566987-018)
15	(.00003131, -.00023742)	(.0000000000, .0000000000)	.03020	(.6678347-018, .8807497-019)
16	(-.00004121, -.00003314)	(.0000000000, .0000000000)	.03060	(.5544707-019, .6894014-019)
17	(-.00001037, .00000370)	(.0000000000, .0000000000)	.03100	(.2335275-019, .6543035-019)
18	(-.00000046, .00000212)	(.0000000000, .0000000000)	.03740	(.5472510-019, .1175459-019)
19	(.00000029, .00000028)	(.0000000000, .0000000000)	.03200	(.8563107-020, .8845050-020)
20	(.00000007, -.00000002)	(.0000000000, .0000000000)	.03220	(.3468724-020, .1410253-019)
21	(.00000000, -.00000001)	(.0000000000, .0000000000)	.03260	(.5956318-020, .1984878-020)
22	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.1698435-020, .1385195-020)
23	(.00000000, .00000000)	(.0000000000, .0000000000)	.03340	(.6274902-021, .5323557-020)
24	(.00000000, .00000000)	(.0000000000, .0000000000)	.03320	(.8440259-021, .4089166-021)
25	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.4226955-021, .2589736-021)
26	(.00000000, .00000000)	(.0000000000, .0000000000)	.03920	(.1345513-021, .6234720-020)
27	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.1485065-021, .1002987-021)

TABLE 8 FOR Z=(4.0, -4.0)

N	JN	BESL. EQ.	TIME	REL. ERROR
1	(-4.33745299, 7.59139379)	(.0000000000, .0000000000)	.02280	(.6448081-015, .3684204-015)
2	(5.40211747, 4.84169783)	(.0000000000, .0000000000)	.02320	(.7707129-016, .8599218-016)
3	(4.61766281, -2.46948615)	(.0000000000, .0000000000)	.02340	(.1275115-016, .2384323-016)
4	(-.08675575, -3.23056533)	(.0000000000, .0000000000)	.02400	(.9141112-016, .2454815-017)
5	(-1.47385323, -.84783493)	(.0000000000, .0000000000)	.02440	(.6917759-018, .1202564-017)
6	(-.69576712, .32845512)	(.0000000000, .0000000000)	.02520	(.1802075-018, .3817339-018)
7	(-.06248013, .29686694)	(.0000000000, .0000000000)	.02580	(.2364986-018, .4977471-019)
8	(.06690974, .08172180)	(.0000000000, .0000000000)	.02640	(.2498539-019, .2045680-019)
9	(.03285602, .00039612)	(.0000000000, .0000000000)	.02700	(.5535187-020, .4591088-018)
10	(.00612502, -.00690448)	(.0000000000, .0000000000)	.03380	(.3110433-020, .2759292-020)
11	(-.00028227, -.00234476)	(.0000000000, .0000000000)	.02820	(.6817817-020, .8207601-021)
12	(-.00045317, -.00031988)	(.0000000000, .0000000000)	.02880	(.4141902-021, .5867864-021)
13	(-.00011761, .00002562)	(.0000000000, .0000000000)	.02920	(.1504652-021, .6907261-021)
14	(-.00001233, .00002090)	(.0000000000, .0000000000)	.02980	(.1309357-021, .7723947-022)
15	(.00000129, .00000438)	(.0000000000, .0000000000)	.03020	(.1108308-021, .3255134-022)
16	(.00000072, .00000037)	(.0000000000, .0000000000)	.03680	(.1700819-022, .3345098-022)
17	(.00000013, -.00000004)	(.0000000000, .0000000000)	.03100	(.8051597-023, .2268162-022)
18	(.00000001, -.00000002)	(.0000000000, .0000000000)	.03160	(.9557274-023, .4278731-023)
19	(.00000000, .00000000)	(.0000000000, .0000000000)	.03180	(.5484841-023, .2225710-023)
20	(.00000000, .00000000)	(.0000000000, .0000000000)	.03220	(.1201466-023, .3000416-023)
21	(.00000000, .00000000)	(.0000000000, .0000000000)	.03260	(.6758926-024, .1506144-023)
22	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.1021022-023, .3701348-024)
23	(.00000000, .00000000)	(.0000000000, .0000000000)	.03940	(.4581478-024, .2225000-024)
24	(.00000000, .00000000)	(.0000000000, .0000000000)	.03320	(.1234539-024, .3725729-024)
25	(.00000000, .00000000)	(.0000000000, .0000000000)	.03320	(.7856605-025, .1517507-024)
26	(.00000000, .00000000)	(.0000000000, .0000000000)	.03320	(.1445208-024, .4411634-025)
27	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.5404426-025, .2950359-025)

TABLE 9 FOR Z=(5.0, 5.0)

N	JN	BESL. EQ.	TIME	REL. ERROR
1	(-21.41287416, -1.36141081)	(.0000000000, .0000000000)	.02280	(.3219888-012, .5064382-011)
2	(-1.87891399, -18.37175618)	(.0000000000, .0000000000)	.02320	(.6828262-012, .6983392-013)
3	(13.31260610, -5.23572606)	(.0000000000, .0000000000)	.02340	(.1703645-013, .4331768-013)
4	(6.72504201, 7.24275688)	(.0000000000, .0000000000)	.02380	(.5677836-014, .5271982-014)
5	(-2.13836698, 5.64989796)	(.0000000000, .0000000000)	.02460	(.2869643-014, .1086099-014)
6	(-3.21351103, .54550806)	(.0000000000, .0000000000)	.02520	(.2935334-015, .1729164-014)
7	(-1.06323659, -1.13907505)	(.0000000000, .0000000000)	.03220	(.1306927-015, .1219913-015)
8	(.13027474, -.65168191)	(.0000000000, .0000000000)	.02640	(.1508467-015, .301508-016)
9	(.22898513, -.11205559)	(.0000000000, .0000000000)	.02700	(.1166999-016, .2384757-016)
10	(.08019841, .03780861)	(.0000000000, .0000000000)	.02760	(.4363181-017, .9255040-017)
11	(.00702892, .02727598)	(.0000000000, .0000000000)	.02820	(.6286045-017, .1619890-017)
12	(-.00472764, .00673493)	(.0000000000, .0000000000)	.02880	(.1139407-017, .7998154-018)
13	(-.00221141, .00023418)	(.0000000000, .0000000000)	.02920	(.2870698-018, .2710831-017)
14	(-.00041316, -.00037639)	(.0000000000, .0000000000)	.03600	(.1752415-018, .1923580-018)
15	(.00000068, -.00013124)	(.0000000000, .0000000000)	.03000	(.1176678-016, .6095005-019)
16	(.00002146, -.00001938)	(.0000000000, .0000000000)	.03080	(.3993418-019, .4421915-019)
17	(.00000598, .00000055)	(.0000000000, .0000000000)	.03100	(.1491530-019, .1624846-018)
18	(.00000072, .00000093)	(.0000000000, .0000000000)	.03160	(.1252312-019, .9668072-020)
19	(-.00000003, .00000022)	(.0000000000, .0000000000)	.03180	(.2527275-019, .4097937-020)
20	(-.00000003, .00000002)	(.0000000000, .0000000000)	.03820	(.2643494-020, .3906075-020)
21	(-.00000001, .00000000)	(.0000000000, .0000000000)	.03260	(.1240309-020, .5614030-020)
22	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.1322677-020, .7987969-021)
23	(.00000000, .00000000)	(.0000000000, .0000000000)	.03320	(.1503874-020, .4076562-021)
24	(.00000000, .00000000)	(.0000000000, .0000000000)	.03320	(.2625888-021, .4808010-021)
25	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.1438784-021, .4574495-021)
26	(.00000000, .00000000)	(.0000000000, .0000000000)	.03320	(.1859362-021, .9279011-022)
27	(.00000000, .00000000)	(.0000000000, .0000000000)	.03920	(.1532491-021, .5404398-022)

TABLE 10 FOR Z=(6.0, -4.0)

N	JN	BESL. EQ.	TIME	REL. ERROR
1	(-5.25591113, -5.89332304)	(.0000000000, .0000000000)	.02280	(.2605860-011, .2324015-011)
2	(-6.06656938, 3.64311620)	(.0000000000, .0000000000)	.02300	(.4284242-012, .7134182-012)
3	(1.33499720, 5.70812456)	(.0000000000, .0000000000)	.02340	(.3509769-012, .8208531-013)
4	(4.35627918, .92481489)	(.0000000000, .0000000000)	.02380	(.1846697-013, .8698742-013)
5	(2.11706673, -2.17366209)	(.0000000000, .0000000000)	.03080	(.6227672-014, .6065523-014)
6	(-.24146212, -1.80437365)	(.0000000000, .0000000000)	.02520	(.8559632-014, .1145454-014)
7	(-.78582322, -.54758954)	(.0000000000, .0000000000)	.02580	(.3951297-015, .5670344-015)
8	(-.43823280, .07353477)	(.0000000000, .0000000000)	.02640	(.1021860-015, .6089806-015)
9	(-.11372629, .14398259)	(.0000000000, .0000000000)	.02700	(.5460516-016, .4313050-016)
10	(.00267153, .06803883)	(.0000000000, .0000000000)	.02760	(.3104146-015, .1218837-016)
11	(.01521625, .01714013)	(.0000000000, .0000000000)	.02820	(.7017923-017, .6230199-017)
12	(.00694794, .00122131)	(.0000000000, .0000000000)	.03480	(.1910881-017, .1087085-016)
13	(.00176948, -.00093107)	(.0000000000, .0000000000)	.02920	(.9017669-018, .1713788-017)
14	(.00022264, -.00047556)	(.0000000000, .0000000000)	.02960	(.8335620-018, .3902479-018)
15	(-.00002587, -.00012583)	(.0000000000, .0000000000)	.03020	(.8081723-018, .1661891-018)
16	(-.00002184, -.00001970)	(.0000000000, .0000000000)	.03060	(.1045993-018, .1160010-018)
17	(-.00000629, -.00000066)	(.0000000000, .0000000000)	.03100	(.3849810-019, .3658134-018)
18	(-.00000111, .00000064)	(.0000000000, .0000000000)	.03760	(.2238999-019, .3914105-019)
19	(-.00000010, .00000022)	(.0000000000, .0000000000)	.03180	(.2428817-019, .1115367-019)
20	(.00000001, .00000004)	(.0000000000, .0000000000)	.03220	(.2915193-019, .5515803-020)
21	(.00000001, .00000001)	(.0000000000, .0000000000)	.03260	(.4126729-020, .4263869-020)
22	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.1678029-020, .1062114-019)
23	(.00000000, .00000000)	(.0000000000, .0000000000)	.03320	(.1051319-020, .2156591-020)
24	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.1126837-020, .6284459-021)
25	(.00000000, .00000000)	(.0000000000, .0000000000)	.03920	(.3310887-020, .3259027-021)
26	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.3010955-021, .2554441-021)
27	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.1230104-021, .4567547-021)

TABLE 11 FOR Z=(7.0, 3.0)

N	JN	BESL. EQ.	TIME	REL. ERROR
1	(.51305100, 2.80119635)	(.0000000001, .0000000000)	.02280	(.1804554-009, .3305118-010)
2	(-2.49278593, .96906203)	(.0000000003, -.0000000001)	.02300	(.7443478-011, .1914738-010)
3	(-1.51596930, -1.81762449)	(.0000000001, .0000000000)	.02340	(.2330368-011, .1943617-011)
4	(.83092470, -1.81479963)	(.0000000000, .0000000000)	.02360	(.7709353-012, .3528807-012)
5	(1.56728985, -.27842675)	(.0000000000, .0000000000)	.02440	(.7074433-013, .3982263-012)
6	(.91661818, .66810018)	(.0000000000, .0000000000)	.02500	(.2002667-013, .2747613-013)
7	(.17490901, .67708470)	(.0000000000, .0000000000)	.02560	(.1665167-013, .4301569-014)
8	(-.13077955, .34928124)	(.0000000000, .0000000000)	.02640	(.3392142-014, .1270102-014)
9	(-.13838850, .10562076)	(.0000000000, .0000000000)	.03320	(.4694880-015, .6151418-015)
10	(-.07152096, .00901523)	(.0000000000, .0000000000)	.02760	(.1281184-015, .1016408-014)
11	(-.02492221, -.00987266)	(.0000000000, .0000000000)	.02820	(.5000162-016, .1262224-015)
12	(-.00588622, -.00686908)	(.0000000000, .0000000000)	.02860	(.2779843-016, .2382088-016)
13	(-.00065467, -.00271697)	(.0000000000, .0000000000)	.02900	(.3172490-016, .7644257-017)
14	(.00017807, -.00077616)	(.0000000000, .0000000000)	.02960	(.1432647-016, .3286951-017)
15	(.00013235, -.00016380)	(.0000000000, .0000000000)	.03020	(.2293802-017, .1853314-017)
16	(.00004694, -.00002230)	(.0000000000, .0000000000)	.03680	(.7462984-018, .1570859-017)
17	(.00001202, -.00000001)	(.0000000000, .0000000000)	.03100	(.3263421-018, .3254629-015)
18	(.00000237, .00000111)	(.0000000000, .0000000000)	.03140	(.1799778-018, .3850519-018)
19	(.00000035, .00000041)	(.0000000000, .0000000000)	.03160	(.1303086-018, .1095108-018)
20	(.00000003, .00000010)	(.0000000000, .0000000000)	.03220	(.1675972-018, .4588775-019)
21	(.00000000, .00000002)	(.0000000000, .0000000000)	.03240	(.1485826-018, .2425533-019)
22	(.00000000, .00000000)	(.0000000000, .0000000000)	.03880	(.2384681-019, .1592072-019)
23	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.8810223-020, .1414018-019)
24	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.4343994-020, .3223414-019)
25	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.2631837-020, .8890182-020)
26	(.00000000, .00000000)	(.0000000000, .0000000000)	.03280	(.1980817-020, .2312512-020)
27	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.2124561-020, .1008477-020)

TABLE 12 FOR Z=(6.0, -6.0)

N	JN	BESL. EQ.	TIME	REL. ERROR
1	(-32.06801399, -42.90433829)	(.0000000003, -.0000000052)	.02280	(.1269552-009, .9492008-010)
2	(-41.34637965, 22.91969086)	(-.0000000007, -.0000000180)	.02320	(.2199401-010, .3967649-010)
3	(10.64599049, 36.76210869)	(-.0000000029, -.0000000027)	.02360	(.1812016-010, .5247444-011)
4	(28.28832055, .78435873)	(-.0000000008, .0000000000)	.02380	(.1377711-011, .4968788-010)
5	(7.68998406, -17.38032251)	(-.0000000001, .0000000001)	.02440	(.9773572-012, .4324351-012)
6	(-7.39539841, -8.85964077)	(.0000000000, .0000000000)	.02520	(.1874420-012, .1564844-012)
7	(-6.22674169, 1.12428332)	(.0000000000, .0000000000)	.03200	(.3935966-013, .2179899-012)
8	(-1.17979744, 2.90677267)	(.0000000000, .0000000000)	.02640	(.3525340-013, .1430861-013)
9	(.77798154, 1.17835032)	(.0000000000, .0000000000)	.02700	(.8723726-014, .5759661-014)
10	(.57924428, .02772512)	(.0000000000, .0000000000)	.02780	(.1841120-014, .3846541-013)
11	(.14121706, -.16673465)	(.0000000000, .0000000000)	.02800	(.1144287-014, .9691615-015)
12	(-.01466615, -.07450738)	(.0000000000, .0000000000)	.02880	(.1611922-014, .3172934-015)
13	(-.02153459, -.01161241)	(.0000000000, .0000000000)	.02920	(.1552525-015, .2879075-015)
14	(-.00683191, .00268887)	(.0000000000, .0000000000)	.03580	(.6697418-016, .1701688-015)
15	(-.00068057, .00194531)	(.0000000000, .0000000000)	.03000	(.8913774-016, .3118513-016)
16	(.00026721, .00047297)	(.0000000000, .0000000000)	.03060	(.2918797-016, .1649019-016)
17	(.00013188, .00002851)	(.0000000000, .0000000000)	.03120	(.7379407-017, .3414209-016)
18	(.00002570, -.00001853)	(.0000000000, .0000000000)	.03140	(.4590936-017, .6366303-017)
19	(.00000080, -.00000701)	(.0000000000, .0000000000)	.03180	(.1739815-016, .1984210-017)
20	(-.00000098, -.00000113)	(.0000000000, .0000000000)	.03840	(.1630552-017, .1414254-017)
21	(-.00000030, -.00000001)	(.0000000000, .0000000000)	.03260	(.5919830-018, .1842109-016)
22	(-.00000004, .00000004)	(.0000000000, .0000000000)	.03280	(.4744373-018, .4712974-018)
23	(.00000000, .00000001)	(.0000000000, .0000000000)	.03320	(.5375142-017, .1926710-018)
24	(.00000000, .00000000)	(.0000000000, .0000000000)	.03320	(.1500647-018, .1712202-018)
25	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.6754278-019, .7211888-018)
26	(.00000000, .00000000)	(.0000000000, .0000000000)	.03320	(.6583848-019, .5177867-019)
27	(.00000000, .00000000)	(.0000000000, .0000000000)	.03920	(.1757008-018, .2525202-019)

TABLE 13 FOR Z=(8.0, -2.0)

N	JN	BESL. EQ.	TIME	REL. ERROR
1	(.92107273, -.45000975)	(.0000000024, .0000000003)	.02280	(.1525120-008, .3328317-008)
2	(-.29203216, -.92552471)	(.0000000062, .0000000006)	.02300	(.1112978-008, .3511797-008)
3	(-.94961437, -.01988801)	(.0000000013, -.0000000002)	.02320	(.7056099-010, .3369151-008)
4	(-.37477421, .74390710)	(.0000000003, -.0000000001)	.02380	(.3510325-010, .1768473-010)
5	(.42184873, .63185371)	(.0000000000, .0000000000)	.03060	(.5844699-011, .3902135-011)
6	(.68522751, .12352336)	(.0000000000, .0000000000)	.02520	(.6450312-012, .3578215-011)
7	(.50193481, -.21562279)	(.0000000000, .0000000000)	.02580	(.1512800-012, .3521551-012)
8	(.23027450, -.27198774)	(.0000000000, .0000000000)	.02640	(.5438352-013, .4604302-013)
9	(.05951730, -.18798965)	(.0000000000, .0000000000)	.02700	(.3336730-013, .1056405-013)
10	(-.00471393, -.09459885)	(.0000000000, .0000000000)	.02740	(.6433419-013, .3205820-014)
11	(-.01496252, -.03736876)	(.0000000000, .0000000000)	.03420	(.2984604-014, .1195041-014)
12	(-.00983280, -.01180194)	(.0000000000, .0000000000)	.02840	(.6457145-015, .5379779-015)
13	(-.00446991, -.00289516)	(.0000000000, .0000000000)	.02900	(.1952192-015, .3014035-015)
14	(-.00162591, -.00047201)	(.0000000000, .0000000000)	.02960	(.7138184-016, .2458835-015)
15	(-.00049731, .00000131)	(.0000000000, .0000000000)	.03000	(.3006990-016, .1141160-013)
16	(-.00013046, .00003784)	(.0000000000, .0000000000)	.03040	(.1432201-016, .4938095-016)
17	(-.00002943, .00001835)	(.0000000000, .0000000000)	.03080	(.7698526-017, .1234750-016)
18	(-.00000562, .00000613)	(.0000000000, .0000000000)	.03740	(.4750889-017, .4352501-017)
19	(-.00000086, .00000167)	(.0000000000, .0000000000)	.03180	(.3568359-017, .1826194-017)
20	(-.00000008, .00000039)	(.0000000000, .0000000000)	.03200	(.4122682-017, .8652609-018)
21	(.00000000, .00000008)	(.0000000000, .0000000000)	.03260	(.7921238-017, .4532785-018)
22	(.00000000, .00000001)	(.0000000000, .0000000000)	.03280	(.7885538-018, .2607882-018)
23	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.2526031-018, .1655241-018)
24	(.00000000, .00000000)	(.0000000000, .0000000000)	.03280	(.1061359-018, .1182668-018)
25	(.00000000, .00000000)	(.0000000000, .0000000000)	.03900	(.5159085-019, .1007536-018)
26	(.00000000, .00000000)	(.0000000000, .0000000000)	.03280	(.2781337-019, .1266800-018)
27	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.1634922-019, .4078016-018)

TABLE 14 FOR Z=(7.0, 7.0)

N	JN	BESL. EQ.	TIME	REL. ERROR
1	(46.79823538, 127.04731350)	(-.0000001841, .0000018206)	.02280	(.1917642-007, .7063687-008)
2	(-108.57072848, 54.86120542)	(-.0000003341, .00000063006)	.02320	(.2153345-008, .4261486-008)
3	(-62.14381335, -80.35247520)	(-.0000011987, .0000010924)	.02360	(.9310683-009, .7200790-009)
4	(47.50089053, -62.86491763)	(-.0000003949, -.0000000152)	.02380	(.2877054-009, .2176300-009)
5	(53.47865501, 17.40058483)	(-.0000000624, -.0000000671)	.02440	(.5737505-010, .1763355-009)
6	(3.12713792, 36.89486750)	(.0000000007, -.0000000202)	.02520	(.2111600-009, .1789752-010)
7	(-19.17407892, 11.54318338)	(.0000000031, -.0000000029)	.02600	(.7103578-011, .1179791-010)
8	(-10.75803347, -6.17760520)	(.0000000009, .0000000000)	.02660	(.2506344-011, .4364690-011)
9	(-.18093669, -6.30840822)	(.0000000001, .0000000001)	.03340	(.2836982-010, .8136984-012)
10	(2.41459002, -1.70057248)	(.0000000000, .0000000000)	.02760	(.3897258-012, .5533595-012)
11	(1.20096174, .42960464)	(.0000000000, .0000000000)	.02820	(.1385155-012, .3872207-012)
12	(.14772059, .48843990)	(.0000000000, .0000000000)	.02860	(.1921976-012, .5813015-013)
13	(-.11038719, .15447189)	(.0000000000, .0000000000)	.02900	(.4243808-013, .3032868-013)
14	(-.06585700, .00344124)	(.0000000000, .0000000000)	.02980	(.1135779-013, .2173604-012)
15	(-.01444432, -.01587541)	(.0000000000, .0000000000)	.03020	(.8009986-014, .7287923-014)
16	(.00088614, -.00650787)	(.0000000000, .0000000000)	.03680	(.1958366-013, .2666606-014)
17	(.00159465, -.00102519)	(.0000000000, .0000000000)	.03100	(.1584294-014, .2464312-014)
18	(.00049683, .00014538)	(.0000000000, .0000000000)	.03140	(.7191383-015, .2457531-014)
19	(.00005675, .00012149)	(.0000000000, .0000000000)	.03180	(.8656870-015, .4043593-015)
20	(-.00001305, .00003034)	(.0000000000, .0000000000)	.03220	(.5035684-015, .2165962-015)
21	(-.00000734, .00000249)	(.0000000000, .0000000000)	.03260	(.1165505-015, .3440987-015)
22	(-.00000152, -.00000084)	(.0000000000, .0000000000)	.03900	(.7146286-016, .1286895-015)
23	(-.00000009, -.00000036)	(.0000000000, .0000000000)	.03320	(.1551326-015, .3703590-016)
24	(.00000004, -.00000006)	(.0000000000, .0000000000)	.03320	(.3789553-016, .2546579-016)
25	(.00000001, .00000000)	(.0000000000, .0000000000)	.03300	(.1276200-016, .8105061-016)
26	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.9695893-017, .1239037-016)
27	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.5274267-016, .4711326-017)

TABLE 15 FOR Z=(9.0, 1.0)

N	JN	BESL. EQ.	TIME	REL. ERROR
1	(.36877890, -.14213813)	(.0000000417, .0000000753)	.02280	(.1075269-006, .2789796-006)
2	(.23264074, .24507589)	(.0000001062, .0000001953)	.02320	(.4061819-007, .3855723-007)
3	(-.25468902, .23838409)	(.0000000197, .0000000481)	.02340	(.8399300-008, .8973792-008)
4	(-.38292004, -.06945546)	(.0000000032, .0000000111)	.02400	(.1204489-008, .6640558-008)
5	(-.08830960, -.26201132)	(.0000000004, .0000000024)	.02460	(.1074873-008, .3622806-009)
6	(.25404227, -.20734848)	(.0000000000, .0000000005)	.02520	(.7355434-010, .9011839-010)
7	(.39255817, -.04825872)	(.0000000000, .0000000001)	.03180	(.8979992-011, .7304731-010)
8	(.34091759, .06617272)	(.0000000000, .0000000000)	.02660	(.1872697-011, .9648014-011)
9	(.21903812, .09794396)	(.0000000000, .0000000000)	.02720	(.5075756-012, .1135123 011)
10	(.11331615, .07924479)	(.0000000000, .0000000000)	.02760	(.1645288-012, .2352680-012)
11	(.04903264, .04836993)	(.0000000000, .0000000000)	.02820	(.6148473-013, .6232713-013)
12	(.01805704, .02439579)	(.0000000000, .0000000000)	.02880	(.2606663-013, .1929375-013)
13	(.00567248, .01060717)	(.0000000000, .0000000000)	.02920	(.1252318-013, .6697113-014)
14	(.00149352, .00407486)	(.0000000000, .0000000000)	.03580	(.6946921-014, .2546184-014)
15	(.00030877, .00140559)	(.0000000000, .0000000000)	.03020	(.4754367-014, .1044412-014)
16	(.00003741, .00044033)	(.0000000000, .0000000000)	.03060	(.5384293-014, .4574215-015)
17	(-.00000555, .00012633)	(.0000000000, .0000000000)	.03080	(.4830982-014, .2123152-015)
18	(-.00000575, .00003340)	(.0000000000, .0000000000)	.03140	(.6039028-015, .1038716-015)
19	(-.00000248, .00000818)	(.0000000000, .0000000000)	.03180	(.1756386-015, .5335233-016)
20	(-.00000083, .00000186)	(.0000000000, .0000000000)	.03840	(.6460852-016, .2869361-016)
21	(-.00000024, .00000039)	(.0000000000, .0000000000)	.03260	(.2693239-016, .1613361-016)
22	(-.00000006, .00000008)	(.0000000000, .0000000000)	.03280	(.1220651-016, .9481234-017)
23	(-.00000001, .00000001)	(.0000000000, .0000000000)	.03300	(.5892149-017, .5830552-017)
24	(.00000000, .00000000)	(.0000000000, .0000000000)	.03320	(.2992897-017, .3764496-017)
25	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.1587362-017, .2569093-017)
26	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.8743930-018, .1877670-017)
27	(.00000000, .00000000)	(.0000000000, .0000000000)	.03900	(.4983292-018, .1510244-017)

TABLE 16 FOR Z*(8.0, -8.0)

N	JN	BESL. EQ.	TIME	REL. ERROR
1	(336.94890641, -75.95002010)	(-.0000060669, -.0002975568)	.02280	(.2852010-006, .1265282-005)
2	(-38.27182079, -312.17128893)	(-.0000697569, -.0010071152)	.02320	(.7475794-006, .9165233-007)
3	(-268.47403366, -11.66076305)	(-.0002219538, -.0001965876)	.02360	(.3014249-007, .6939921-006)
4	(-58.03315569, 207.12073798)	(-.0000824400, .0000044115)	.02380	(.3756306-007, .1052479-007)
5	(135.89708642, 86.20455380)	(-.0000147050, .0000161755)	.02080	(.4124576-008, .6502184-008)
6	(89.09098844, -68.30721285)	(.0000002353, .0000055144)	.02520	(.1547401-008, .2018227-008)
7	(-17.84843547, -70.61672208)	(.0000009773, .0000009049)	.02580	(.1820540-008, .4601430-009)
8	(-42.91873767, -9.09980000)	(.0000003077, -.0000000107)	.02640	(.1713122-009, .8079854-009)
9	(-15.97050219, 18.59818441)	(.0000000467, -.0000000498)	.02700	(.1001656-009, .8601346-010)
10	(4.02896524, 12.05594250)	(-.0000000004, -.0000000146)	.02760	(.8318685-010, .2780014-010)
11	(5.93678062, 1.50795027)	(-.0000000022, -.0000000021)	.03440	(.1140550-010, .4490329-010)
12	(2.06067650, -1.81943752)	(-.0000000006, .0000000000)	.02860	(.6409621-011, .7259472-011)
13	(-.11660959, -1.14609181)	(-.0000000001, .0000000001)	.02900	(.2135805-010, .2173084-011)
14	(-.38776790, -.23245224)	(.0000000000, .0000000000)	.02960	(.1172026-011, .1955129-011)
15	(-.15519281, .06070657)	(.0000000000, .0000000000)	.03020	(.5176815-012, .1323423-011)
16	(-.01704343, .05529054)	(.0000000000, .0000000000)	.03060	(.8080500-012, .2490832-012)
17	(.01052486, .01578765)	(.0000000000, .0000000000)	.03100	(.2177082-012, .1451355-012)
18	(.00586001, .00062356)	(.0000000000, .0000000000)	.03760	(.6319752-013, .5929137-012)
19	(.00125715, -.00119963)	(.0000000000, .0000000000)	.03180	(.4628945-013, .4850897-013)
20	(-.00002514, -.00048694)	(.0000000000, .0000000000)	.03220	(.3539688-012, .1827115-013)
21	(-.00010264, -.00008056)	(.0000000000, .0000000000)	.03260	(.1290446-013, .1644034-013)
22	(-.00003281, .00000605)	(.0000000000, .0000000000)	.03300	(.5855269-014, .3173569-013)
23	(-.00000424, .00000698)	(.0000000000, .0000000000)	.03320	(.6411029-014, .3891299-014)
24	(.00000055, .00000184)	(.0000000000, .0000000000)	.03920	(.6773957-014, .2041893-014)
25	(.00000039, .00000019)	(.0000000000, .0000000000)	.03320	(.1292889-014, .2719831-014)
26	(.00000009, -.00000004)	(.0000000000, .0000000000)	.03300	(.7646560-015, .01876381-014)
27	(.00000001, -.00000002)	(.0000000000, .0000000000)	.03300	(.1248838-014, .4648287-015)

TABLE 17 FOR Z=(9.0, 9.0)

N	JN	BESL. EQ.	TIME	REL. ERROR
1	(633.81320074, -621.22017556)	(-.0091614383, .0270374154)	.02280	(.9356040-005, .9545701-005)
2	(620.63016019, 530.64875963)	(-.0077508972, .0884860859)	.02320	(.3200327-005, .3743003-005)
3	(-377.97299388, 601.22475567)	(-.0222716973, .0190984212)	.02360	(.1672107-005, .1051206-005)
4	(-546.21290626, -204.24931825)	(-.0091672422, -.0006208584)	.02380	(.3506478-006, .9377183-006)
5	(44.43418825, -449.24089960)	(-.0018151484, -.0020479703)	.02460	(.1246868-005, .1233271-006)
6	(321.32027351, -70.01461944)	(.0000419079, -.0007760730)	.02520	(.4770890-007, .2189519-006)
7	(123.10291158, 188.35096809)	(.0001582593, -.0001417527)	.02600	(.3302064-007, .2158171-007)
8	(-79.07836710, 120.76310681)	(.0000548027, .0000024178)	.02660	(.1308530-007, .8568544-008)
9	(-86.04980944, -10.71410258)	(.0000092825, .0000100596)	.03300	(.2943375-008, .2363957-007)
10	(-17.68554486, -45.42739995)	(-.0000001206, .0000032813)	.02760	(.3375521-008, .1314139-008)
11	(15.92431522, -20.11018084)	(-.0000005540, .0000005179)	.02800	(.8520556-009, .6747031-009)
12	(12.56948688, 1.38523810)	(-.0000001688, -.0000000053)	.02880	(.2368867-009, .2149482-008)
13	(2.68198475, 5.19784914)	(-.0000000249, -.0000000264)	.02920	(.2355093-009, .1215180-009)
14	(-1.18750459, 2.24878824)	(.0000000002, -.0000000075)	.02980	(.1091930-009, .5766094-010)
15	(-1.03109906, .14749527)	(.0000000011, -.0000000010)	.03020	(.2500964-010, .1748355-009)
16	(-.28516841, -.28446436)	(.0000000003, .0000000000)	.03620	(.1743894-010, .1748210-010)
17	(.01841858, -.14624363)	(.0000000000, .0000000000)	.03100	(.5053750-010, .6364921-011)
18	(.04372109, -.02656427)	(.0000000000, .0000000000)	.03160	(.3871137-011, .6371352-011)
19	(.01589505, .00567293)	(.0000000000, .0000000000)	.03180	(.1882316-011, .5274088-011)
20	(.00181131, .00498423)	(.0000000000, .0000000000)	.03240	(.2841113-011, .1032482-011)
21	(-.00079386, .00137801)	(.0000000000, .0000000000)	.03260	(.1085621-011, .6254187-012)
22	(-.00044829, .00008348)	(.0000000000, .0000000000)	.03920	(.3137089-012, .1684537-011)
23	(-.00009789, -.00007812)	(.0000000000, .0000000000)	.03320	(.2285790-012, .2864255-012)
24	(-.00000149, -.00003296)	(.0000000000, .0000000000)	.03320	(.2328190-011, .1053556-012)
25	(.00000600, -.00000581)	(.0000000000, .0000000000)	.03300	(.8765441-013, .9057725-013)
26	(.00000203, .00000015)	(.0000000000, .0000000000)	.03300	(.3836873-013, .5208070-012)
27	(.00000029, .00000038)	(.0000000000, .0000000000)	.03300	(.3851584-013, .2981417-013)

TABLE 18 FOR Z=(10.0, -1.0)

N	JN	BESL. EQ.	TIME	REL. ERROR
1	(.05220533, .29346758)	(.0000036026, -.0000027811)	.02280	(.2913733-004, .5183278-005)
2	(.38622972, .01272424)	(.0000093286, -.0000071817)	.02320	(.1041588-005, .3161621-004)
3	(.10025309, -.27313210)	(.0000022248, -.0000020915)	.02360	(.1008195-005, .3700579-006)
4	(-.31044774, -.16902532)	(.0000004943, -.0000005562)	.02380	(.7790500-007, .1430878-006)
5	(-.33276414, .11466073)	(.0000001021, -.0000001434)	.02460	(.1660066-007, .4817782-007)
6	(-.03037425, .24960385)	(.0000000195, -.00000000342)	.02520	(.3973371-007, .4835189-008)
7	(.26702002, .17828948)	(.0000000034, -.0000000077)	.03200	(.9463250-009, .1417289-008)
8	(.37578762, .03454275)	(.0000000005, -.0000000016)	.02640	(.1351551-009, .1470340-008)
9	(.32281498, -.06403757)	(.0000000001, -.00000000003)	.02700	(.3040735-010, .1532842-009)
10	(.21093884, -.09113774)	(.0000000000, -.00000000001)	.02760	(.8660492-011, .2004476-010)
11	(.11293277, -.07466313)	(.0000000000, .0000000000)	.02820	(.2903032-011, .4391021-011)
12	(.05131660, -.04689561)	(.0000000000, .0000000000)	.02860	(.1106997-011, .1211357-011)
13	(.02015117, -.02457794)	(.0000000000, .0000000000)	.03540	(.4721866-012, .3871404-012)
14	(.00688469, -.01118689)	(.0000000000, .0000000000)	.02980	(.2240260-012, .1378712-012)
15	(.00203642, -.00452661)	(.0000000000, .0000000000)	.03020	(.1189314-012, .5350456-013)
16	(.00050861, -.00165360)	(.0000000000, .0000000000)	.03040	(.7250890-013, .2230235-013)
17	(.00009895, -.00055137)	(.0000000000, .0000000000)	.03100	(.5508482-013, .9885308-014)
18	(.00001008, -.00016919)	(.0000000000, .0000000000)	.03140	(.7762020-013, .4625209-014)
19	(-.00000271, -.00004808)	(.0000000000, .0000000000)	.03200	(.4031889-013, .2271927-014)
20	(-.00000219, -.00001271)	(.0000000000, .0000000000)	.03820	(.6786503-014, .1166755-014)
21	(-.00000091, -.00000314)	(.0000000000, .0000000000)	.03260	(.2149929-014, .6245094-015)
22	(-.00000030, -.00000073)	(.0000000000, .0000000000)	.03280	(.8364933-015, .3476188-015)
23	(-.00000009, -.00000016)	(.0000000000, .0000000000)	.03320	(.3644102-015, .2009337-015)
24	(-.00000002, -.00000003)	(.0000000000, .0000000000)	.03320	(.1713544-015, .1205379-015)
25	(-.00000001, -.00000001)	(.0000000000, .0000000000)	.03300	(.8535989-016, .7506864-016)
26	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.4455163-016, .4860987-016)
27	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.2418791-016, .3283560-016)

TABLE 19 FOR Z=(9.0, 2.0)

N	JN	BESL. EQ.	TIME	REL. ERROR
1	(.85864274, -.46597136)	(.0000000747, -.0000001459)	.02260	(.8660826-007, .1595925-008)
2	(.59298100, .71707782)	(.0000002006, -.0000003909)	.02300	(.3042684-007, .2516120-007)
3	(-.54000817, .71386493)	(.0000000667, -.0000000807)	.02340	(.7700995-008, .5825472-008)
4	(-.83526408, -.18732718)	(.0000000186, -.0000000146)	.02380	(.1092908-008, .4873113-008)
5	(-.20277123, -.71531589)	(.0000000046, -.0000000022)	.03060	(.9433172-009, .2674030-009)
6	(.45225551, -.52235523)	(.0000000010, -.0000000002)	.02500	(.8476799-010, .7339218-010)
7	(.62991323, -.07607820)	(.0000000002, .0000000000)	.02580	(.1168970-010, .9678850-010)
8	(.45843716, .20207966)	(.0000000000, .0000000000)	.02660	(.2974695-011, .6718941-011)
9	(.21942208, .24658976)	(.0000000000, .0000000000)	.02700	(.1097108-011, .9762353-012)
10	(.06619351, .17495970)	(.0000000000, .0000000000)	.02760	(.6209117-012, .2349131-012)
11	(.00308640, .09276324)	(.0000000000, .0000000000)	.02800	(.2192376-011, .7294420-013)
12	(-.01098541, .03952643)	(.0000000000, .0000000000)	.02840	(.9791112-013, .2721201-013)
13	(-.00868145, .01388391)	(.0000000000, .0000000000)	.02920	(.1903769-013, .1190405-013)
14	(-.00442042, .00400616)	(.0000000000, .0000000000)	.02940	(.5559817-014, .6134736-014)
15	(-.00178445, .00090545)	(.0000000000, .0000000000)	.03000	(.1984035-014, .3910094-014)
16	(-.00060869, .00012960)	(.0000000000, .0000000000)	.03040	(.8125036-015, .3816041-014)
17	(-.00018034, -.00000803)	(.0000000000, .0000000000)	.03100	(.3718097-015, .8347956-014)
18	(-.00004697, -.00001424)	(.0000000000, .0000000000)	.03760	(.1880096-015, .6200836-015)
19	(-.00001077, -.00000647)	(.0000000000, .0000000000)	.03180	(.1049770-015, .1748676-015)
20	(-.00000215, -.00000215)	(.0000000000, .0000000000)	.03200	(.6546671-016, .6566027-016)
21	(-.00000036, -.00000060)	(.0000000000, .0000000000)	.03240	(.4722109-016, .2870075-016)
22	(-.00000005, -.00000014)	(.0000000000, .0000000000)	.03280	(.4392606-016, .1395126-016)
23	(.00000000, -.00000003)	(.0000000000, .0000000000)	.03300	(.1042761-015, .7391845-017)
24	(.00000000, -.00000001)	(.0000000000, .0000000000)	.03920	(.2550877-016, .4231982-017)
25	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.6215591-017, .2614708-017)
26	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.2402046-017, .1754221-017)
27	(.00000000, .00000000)	(.0000000000, .0000000000)	.03280	(.1115230-017, .1301403-017)

TABLE 20 FOR Z=(8.0, -3.0)

N	JN	BESL. EQ.	TIME	REL. ERROR
1	(2.47792513,	(-1.09173697) (-.0000000044,	.02280 (	.2092197-008, .4748677-008)
2	(-.62942479,	(-2.48071242) (-.0000000111,	.02320 (	.1851930-008, .4698855-009)
3	(-2.34604903,	(-.09916570) (-.0000000007,	.02360 (	.1061287-009, .2510779-008)
4	(-.88873098,	(1.83702974) (.0000000003,	.02400 (	.5699172-010, .2757185-010)
5	(.96293264,	(1.41752679) (.0000000001,	.02460 (	.1021398-010, .6938404-011)
6	(1.36145437,	(.11215002) (.0000000000,	.02520 (	.1341811-011, .1628902-010)
7	(.77216624,	(-.59863968) (.0000000000,	.02600 (	.4211180-012, .5431867-012)
8	(.16766188,	(-.58635087) (.0000000000,	.02660 (	.3314147-012, .9476511-013)
9	(-.09263800,	(-.31923897) (.0000000000,	.02700 (	.9855417-013, .2859883-013)
10	(-.11425047,	(-.11190753) (.0000000000,	.02760 (	.1264369-013, .1290840-013)
11	(-.06579520,	(-.01994230) (.0000000000,	.02820 (	.3349739-014, .1105172-013)
12	(-.02634903,	(.00434139) (.0000000000,	.02880 (	.1232180-014, .7478418-014)
13	(-.00778828,	(.00537267) (.0000000000,	.02920 (	.5936186-015, .8605155-015)
14	(-.00158288,	(.00264532) (.0000000000,	.02960 (	.4025032-015, .2408468-015)
15	(-.00011272,	(.00092307) (.0000000000,	.03000 (	.7545632-015, .9214398-016)
16	(.00007427,	(.00025045) (.0000000000,	.03680 (	.1482571-015, .4396367-016)
17	(.00004381,	(.00005290) (.0000000000,	.03100 (	.3158105-016, .2615430-016)
18	(.00001505,	(.00000785) (.0000000000,	.03140 (	.1122173-016, .2150526-016)
19	(.00000394,	(.00000034) (.0000000000,	.03180 (	.5082218-017, .5818837-016)
20	(.00000083,	(-.00000026) (.0000000000,	.03220 (	.2774467-017, .8872933-017)
21	(.00000014,	(-.00000012) (.0000000000,	.03260 (	.1841657-017, .2230784-017)
22	(.00000002,	(-.00000003) (.0000000000,	.03880 (	.1637287-017, .8864632-018)
23	(.00000000,	(-.00000000) (.0000000000,	.03300 (	.3839669-017, .4400058-018)
24	(.00000000,	(.00000000) (.0000000000,	.03320 (	.9510888-018, .2591789-018)
25	(.00000000,	(.00000000) (.0000000000,	.03300 (	.2425496-018, .1822715-018)
26	(.00000000,	(.00000000) (.0000000000,	.03300 (	.1013003-018, .1654169-018)
27	(.00000000,	(.00000000) (.0000000000,	.03320 (	.5284884-019, .3006966-018)

TABLE 21 FOR Z=(8.0, 4.0)

N	JN	BESL. EQ.	TIME	REL. ERROR
1	(6.68116926, 2.57549712)	(-.0000000152, .0000000457)	.02260	(.3852680-008, .9994345-008)
2	(-1.39912668, 6.53156461)	(-.0000000499, .0000001274)	.02300	(.4330318-008, .9275975-009)
3	(-5.93450701, .31695407)	(-.0000000234, .0000000213)	.02320	(.2282849-009, .4274305-008)
4	(-2.06649131, -4.56104007)	(-.0000000067, .0000000019)	.02360	(.1396124-009, .6325482-010)
5	(2.45689794, -3.13918959)	(-.0000000014, -.0000000003)	.02440	(.2387056-010, .1868238-010)
6	(2.95379445, .19340150)	(-.0000000002, -.0000000002)	.02500	(.3860617-011, .5896267-010)
7	(1.20369630, 1.59899473)	(.0000000000, .0000000000)	.03200	(.1765321-011, .1328904-011)
8	(-.14932332, 1.20260370)	(.0000000000, .0000000000)	.02640	(.2545588-011, .3160772-012)
9	(-.48053065, .44462985)	(.0000000000, .0000000000)	.02680	(.1360618-012, .1470479-012)
10	(-.31546498, .03020761)	(.0000000000, .0000000000)	.02760	(.3432871-013, .3585025-012)
11	(-.12019170, -.06874965)	(.0000000000, .0000000000)	.02780	(.1439100-013, .2515910-013)
12	(-.02458138, -.04924596)	(.0000000000, .0000000000)	.02840	(.1085116-013, .5416415-014)
13	(.00210124, -.01994301)	(.0000000000, .0000000000)	.03500	(.1892347-013, .1993819-014)
14	(.00411869, -.00533747)	(.0000000000, .0000000000)	.02960	(.1392742-014, .1074717-014)
15	(.00195863, -.00076807)	(.0000000000, .0000000000)	.03020	(.4092994-015, .1043742-014)
16	(.00060511, .00099530)	(.0000000000, .0000000000)	.03040	(.1795406-015, .1139964-014)
17	(.00013020, .00010487)	(.0000000000, .0000000000)	.03080	(.1097581-015, .1362684-015)
18	(.00001583, .00003991)	(.0000000000, .0000000000)	.03140	(.1153545-015, .4574873-016)
19	(-.00000137, .00001032)	(.0000000000, .0000000000)	.03180	(.1654359-015, .2197095-016)
20	(-.00000142, .00000192)	(.0000000000, .0000000000)	.03820	(.1925093-016, .1424888-016)
21	(-.00000047, .00000022)	(.0000000000, .0000000000)	.03260	(.6801810-017, .1471515-016)
22	(-.00000011, -.00000001)	(.0000000000, .0000000000)	.03260	(.3411025-017, .5283898-016)
23	(-.00000002, -.00000001)	(.0000000000, .0000000000)	.03300	(.2260423-017, .3614024-017)
24	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.2214227-017, .1267789-017)
25	(.00000000, .00000000)	(.0000000000, .0000000000)	.03280	(.2114927-016, .6435027-018)
26	(.00000000, .00000000)	(.0000000000, .0000000000)	.03920	(.8665028-018, .4262433-018)
27	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.2855340-018, .3933916-018)

TABLE 22 FOR Z=(8.0, -5.0)

N	JN	BESL. EQ.	TIME	REL. ERROR
1	(17.91075563, -6.02381185)	(.0000002598, .0000002331)	.02280	(.9284352-008, .2760542-007)
2	(-3.15625591, -17.14816892)	(.0000007750, .0000006825)	.02320	(.1307992-007, .2407462-008)
3	(-15.19207511, -.85109290)	(.0000002488, .0000000423)	.02380	(.6409069-009, .1144024-007)
4	(-4.75033917, 11.56822732)	(.0000000542, -.0000000220)	.02380	(.4603978-009, .1890563-009)
5	(6.57690059, 7.03483427)	(.0000000076, -.0000000104)	.03060	(.7129826-010, .6665709-010)
6	(6.71000583, -1.54989282)	(.0000000002, -.0000000027)	.02520	(.1433225-010, .6204913-010)
7	(1.70573008, -4.18302933)	(-.0000000003, -.0000000005)	.02600	(.1108105-010, .4518562-011)
8	(-1.27344604, -2.37255864)	(-.0000000001, -.0000000001)	.02640	(.2800500-011, .1503139-011)
9	(-1.40456605, -.37386043)	(.0000000000, .0000000000)	.02720	(.4606442-012, .1730606-011)
10	(-.62104915, .34731317)	(.0000000000, .0000000000)	.02760	(.1820049-012, .3254526-012)
11	(-.10216633, .30043564)	(.0000000000, .0000000000)	.03440	(.1863838-012, .6338180-013)
12	(.04768742, .12053375)	(.0000000000, .0000000000)	.02880	(.6495000-013, .2569852-013)
13	(.04252514, .02388988)	(.0000000000, .0000000000)	.02920	(.1145199-013, .2038510-013)
14	(.01680186, -.00258585)	(.0000000000, .0000000000)	.02980	(.4410348-014, .2865674-013)
15	(.00383030, -.00396820)	(.0000000000, .0000000000)	.03020	(.2851752-014, .2752655-014)
16	(.00021503, -.00165934)	(.0000000000, .0000000000)	.03040	(.7261068-014, .9409379-015)
17	(-.00022871, -.00041817)	(.0000000000, .0000000000)	.03100	(.9470865-015, .5180052-015)
18	(-.00011528, -.00005552)	(.0000000000, .0000000000)	.03780	(.2532442-015, .5258223-015)
19	(-.00003203, .00000537)	(.0000000000, .0000000000)	.03180	(.1194242-015, .7128171-015)
20	(-.00000558, .00000547)	(.0000000000, .0000000000)	.03240	(.8733595-016, .8913755-016)
21	(-.00000034, .00000176)	(.0000000000, .0000000000)	.03260	(.1780025-015, .3446206-016)
22	(.00000016, .00000036)	(.0000000000, .0000000000)	.03300	(.4716973-016, .2044359-016)
23	(.00000007, .00000004)	(.0000000000, .0000000000)	.03320	(.1256880-016, .1981619-016)
24	(.00000002, .00000000)	(.0000000000, .0000000000)	.03900	(.6123554-017, .2171418-015)
25	(.00000000, .00000000)	(.0000000000, .0000000000)	.03320	(.4411507-017, .6194498-017)
26	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.6028485-017, .2295047-017)
27	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.5899470-017, .1333187-017)

TABLE 23 FOR Z=(6.0, 8.0)

N	JN	BESL. EQ.	TIME	REL. ERROR
1	(-200.05811087, 305.03037839)	(.0000015543, .0000016885)	.02260	(.6388287-008, .4189717-008)
2	(-285.90905925, -149.98342054)	(.0000067824, .0000060991)	.02300	(.1176330-008, .2242404-008)
3	(83.44524216, -249.54450038)	(-.0000001949, .0000023650)	.02320	(.1007617-008, .3369372-009)
4	(196.16798626, 20.09368418)	(-.0000004936, .0000003141)	.02360	(.1020515-009, .9962955-009)
5	(23.57534912, 133.64195759)	(-.0000001285, -.000000478)	.02440	(.1929809-009, .3404491-010)
6	(-75.10921072, 41.23121108)	(-.0000000088, -.0000000293)	.02500	(.1316873-010, .2398894-010)
7	(-38.07201820, -31.85064332)	(.0000000039, -.0000000053)	.02580	(.5412403-011, .6469605-011)
8	(7.45599491, -25.34509108)	(.0000000013, .0000000000)	.02640	(.5527394-011, .1626043-011)
9	(12.78805673, -2.02431760)	(.0000000002, .0000000002)	.03300	(.6197522-012, .3915110-011)
10	(3.44008901, 4.74402637)	(.0000000000, .0000000000)	.02740	(.4266377-012, .3093726-012)
11	(-1.06950772, 2.21300684)	(.0000000000, .0000000000)	.02800	(.2450513-012, .1184290-012)
12	(-.95694717, .05947624)	(.0000000000, .0000000000)	.02860	(.4721988-013, .7597476-012)
13	(-.19430181, -.29002248)	(.0000000000, .0000000000)	.02900	(.3876009-013, .2596749-013)
14	(-.05058958, -.10776355)	(.0000000000, .0000000000)	.02940	(.2401092-013, .1127192-013)
15	(.03790196, -.00434092)	(.0000000000, .0000000000)	.03600	(.5007585-014, .4372279-013)
16	(.00721573, .00898518)	(.0000000000, .0000000000)	.03040	(.3985341-014, .3200510-014)
17	(-.00104569, .00312019)	(.0000000000, .0000000000)	.03100	(.4044231-014, .1355364-014)
18	(-.00086202, .00022427)	(.0000000000, .0000000000)	.03140	(.7008470-015, .2693794-014)
19	(-.00017037, -.00015315)	(.0000000000, .0000000000)	.03180	(.4925137-015, .5478718-015)
20	(.00000799, -.00005554)	(.0000000000, .0000000000)	.03200	(.1419079-014, .2041467-015)
21	(.00001181, -.00000572)	(.0000000000, .0000000000)	.03240	(.1263727-015, .2608485-015)
22	(.00000254, .00000146)	(.0000000000, .0000000000)	.03900	(.7522071-016, .1309106-015)
23	(.00000005, .00000063)	(.0000000000, .0000000000)	.03300	(.4750943-015, .3818866-016)
24	(-.00000010, .00000008)	(.0000000000, .0000000000)	.03300	(.2917047-016, .3569443-016)
25	(-.00000002, -.00000001)	(.0000000000, .0000000000)	.03300	(.1415563-016, .4963272-016)
26	(.00000000, .00000000)	(.0000000000, .0000000000)	.03280	(.2550355-016, .8807838-017)
27	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.8816154-017, .6368827-017)

TABLE 24 FOR Z=(5.0, -8.0)

N	JN	BESL. EQ.	TIME	REL. ERROR
1	(-373.83648469, -11.77559129)	(-.0000001445, .0000001643)	.02280	(.4448197-009, .1412157-007)
2	(-40.11033558, 323.14293509)	(-.0000006837, .0000007161)	.02320	(.1029250-008, .1277563-009)
3	(248.63670227, 69.97028750)	(.0000000588, .0000002360)	.02360	(.3916038-010, .1391549-009)
4	(86.18367567, -165.46124594)	(.0000000538, .0000001777)	.02380	(.2537657-010, .1321787-010)
5	(-90.91909815, -82.36011441)	(.0000000097, -.0000000080)	.02460	(.5157569-011, .5693551-011)
6	(-63.23025718, 37.46648670)	(-.0000000003, -.0000000026)	.02520	(.1520941-011, .2566814-011)
7	(7.87866944, 39.41499657)	(-.0000000005, -.0000000002)	.03200	(.2399044-011, .4795453-012)
8	(19.82606892, 3.44880249)	(-.0000000001, .0000000001)	.02640	(.1798786-012, .1034065-011)
9	(4.98244062, -7.80105252)	(.0000000000, .0000000000)	.02700	(.1298571-012, .8293820-013)
10	(-2.16571815, -3.27603033)	(.0000000000, .0000000000)	.02760	(.5219238-013, .3450334-013)
11	(-1.52633908, .22669368)	(.0000000000, .0000000000)	.02820	(.1247570-013, .8399948-013)
12	(-.16906147, .53783512)	(.0000000000, .0000000000)	.02880	(.1832054-013, .5758825-014)
13	(.13811751, .13376039)	(.0000000000, .0000000000)	.03520	(.3525955-014, .3640820-014)
14	(.05819761, -.01966329)	(.0000000000, .0000000000)	.02980	(.1273283-014, .3768547-014)
15	(.00291891, -.01821652)	(.0000000000, .0000000000)	.03020	(.3742180-014, .5996251-015)
16	(-.00415491, -.00316749)	(.0000000000, .0000000000)	.03060	(.3757808-015, .4929245-015)
17	(-.00127742, .00057094)	(.0000000000, .0000000000)	.03120	(.1695704-015, .3793934-015)
18	(-.00003000, .00035405)	(.0000000000, .0000000000)	.03140	(.9730814-015, .8245522-016)
19	(.00007106, .00004803)	(.0000000000, .0000000000)	.03180	(.5382938-016, .7964445-016)
20	(.00001765, -.00000880)	(.0000000000, .0000000000)	.03840	(.2762365-016, .5543248-016)
21	(.00000024, -.00000432)	(.0000000000, .0000000000)	.03260	(.2514734-015, .1400024-016)
22	(-.00000076, -.00000050)	(.0000000000, .0000000000)	.03300	(.9604641-017, .1476051-016)
23	(-.00000016, .00000008)	(.0000000000, .0000000000)	.03320	(.5290333-017, .1042216-016)
24	(.00000000, .00000004)	(.0000000000, .0000000000)	.03300	(.4921983-016, .2814212-017)
25	(.00000001, .00000000)	(.0000000000, .0000000000)	.03320	(.2039874-017, .3071285-017)
26	(.00000000, .00000000)	(.0000000000, .0000000000)	.03900	(.1159749-017, .2380969-017)
27	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.8129326-017, .6506281-018)

TABLE 25 FOR Z=(9.0, 6.0)

N	JN	BESL. EQ.	TIME	REL. ERROR
1	(47.77790403, 14.03828260)	(-.0000025128, .0000017064)	.02280	(.2674937-007, .9103882-007)
2	(-7.19836507, 45.04135623)	(-.0000076044, .0000055279)	.02300	(.4672219-007, .7466990-008)
3	(-39.27145538, 2.10255909)	(-.0000024365, -.0000000210)	.02340	(.2141017-008, .3998976-007)
4	(-10.89501225, -29.89440392)	(-.0000004779, -.0000003610)	.03000	(.1837459-008, .6696654-009)
5	(17.94933365, -16.00537172)	(-.0000000393, -.0000001344)	.02440	(.2534818-009, .2842689-009)
6	(15.55125614, 6.32050636)	(.0000000109, -.0000000293)	.02520	(.6319577-010, .1564896-009)
7	(1.62663683, 10.80415341)	(.0000000056, -.0000000036)	.02580	(.1266792-009, .1907240-010)
8	(-4.75393403, 4.41377052)	(.0000000014, .0000000001)	.02640	(.8669077-011, .9337191-011)
9	(-3.47445269, -.59075047)	(.0000000002, .0000000002)	.02700	(.2281058-011, .1341586-010)
10	(-.88728836, -1.51204229)	(.0000000000, .0000000000)	.02740	(.1654109-011, .9706551-012)
11	(.24034057, -.76377116)	(.0000000000, .0000000000)	.03420	(.1090470-011, .3431449-012)
12	(.30210983, -.14944450)	(.0000000000, .0000000000)	.02860	(.1495712-012, .3023660-012)
13	(.12451022, .04179957)	(.0000000000, .0000000000)	.02900	(.6048625-013, .1801731-012)
14	(.02207875, .04215166)	(.0000000000, .0000000000)	.02960	(.5501663-013, .2881743-013)
15	(-.00423903, .01552787)	(.0000000000, .0000000000)	.03000	(.4477373-013, .1222301-013)
16	(-.00430226, .00274548)	(.0000000000, .0000000000)	.03040	(.6684200-014, .1047438-013)
17	(-.00150344, -.00023911)	(.0000000000, .0000000000)	.03080	(.2812883-014, .1768637-013)
18	(-.00027488, -.00032884)	(.0000000000, .0000000000)	.03720	(.2197870-014, .1827170-014)
19	(.00000149, -.00011423)	(.0000000000, .0000000000)	.03180	(.5625624-013, .7345732-015)
20	(.00001897, -.00002181)	(.0000000000, .0000000000)	.03220	(.5976948-015, .5199223-015)
21	(.00000687, -.00000109)	(.0000000000, .0000000000)	.03240	(.2170238-015, .1366110-014)
22	(.00000138, .00000082)	(.0000000000, .0000000000)	.03280	(.1390518-015, .2346351-015)
23	(.00000012, .00000033)	(.0000000000, .0000000000)	.03300	(.1999775-015, .7242451-016)
24	(-.00000002, .00000007)	(.0000000000, .0000000000)	.03900	(.1193497-015, .4184330-016)
25	(-.00000001, .00000001)	(.0000000000, .0000000000)	.03300	(.2736264-016, .4441435-016)
26	(.00000000, .00000000)	(.0000000000, .0000000000)	.03280	(.1408143-016, .1108014-015)
27	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.1223766-016, .1182797-016)

TABLE 26 FOR Z=(9.0, -4.0)

N	JN	BESL. EQ.	TIME	REL. ERROR
1	(5.6281134, 3.89716409)	(.0000018873, -.0000004354)	.02280	(.1332549-006, .1924409-006)
2	(4.41358755, -4.72678839)	(.0000052392, -.0000011836)	.02320	(.4404093-007, .4112274-007)
3	(-3.21040237, -4.92342162)	(.0000011006, -.0000008124)	.02360	(.1490784-007, .9720914-008)
4	(-4.98265568, 1.19158814)	(.0000001644, -.0000002868)	.02380	(.2252422-008, .9418560-008)
5	(-.88116494, 4.16413671)	(.0000000080, -.0000000756)	.02440	(.2850931-008, .6032800-009)
6	(2.44791018, 2.30867687)	(-.0000000051, -.0000000159)	.02500	(.2197235-009, .2329747-009)
7	(2.46423514, -.38231413)	(-.0000000023, -.0000000026)	.02580	(.4478519-010, .2886664-009)
8	(.97377249, -1.38263988)	(-.0000000006, -.0000000003)	.02660	(.2232415-010, .1572256-010)
9	(-.10637750, -1.02777560)	(-.0000000001, .0000000000)	.03320	(.3870483-010, .4006052-011)
10	(-.38854891, -.41281195)	(.0000000000, .0000000000)	.02780	(.1932686-011, .1819092-011)
11	(-.27417763, -.05871990)	(.0000000000, .0000000000)	.02820	(.4816958-012, .2249156-011)
12	(-.11784099, .04421225)	(.0000000000, .0000000000)	.02860	(.1903121-012, .5072478-012)
13	(-.03198762, .04054578)	(.0000000000, .0000000000)	.02920	(.1150841-012, .9079285-013)
14	(-.00279679, .01930323)	(.0000000000, .0000000000)	.02960	(.2090893-012, .3029435-013)
15	(.00243347, .00637352)	(.0000000000, .0000000000)	.03640	(.3698036-013, .1411946-013)
16	(.00168560, .00144798)	(.0000000000, .0000000000)	.03060	(.7966806-014, .9274196-014)
17	(.00066046, .00014994)	(.0000000000, .0000000000)	.03100	(.2944874-014, .1297158-013)
18	(.00018770, -.00004896)	(.0000000000, .0000000000)	.03160	(.1457959-014, .5589784-014)
19	(.00003916, -.00003482)	(.0000000000, .0000000000)	.03200	(.9558685-015, .1074974-014)
20	(.00000494, -.00001245)	(.0000000000, .0000000000)	.03220	(.1007682-014, .4006529-015)
21	(-.00000027, -.00000324)	(.0000000000, .0000000000)	.03260	(.2384572-014, .1992301-015)
22	(-.00000039, -.00000064)	(.0000000000, .0000000000)	.03920	(.2108813-015, .1265706-015)
23	(-.00000014, -.00000009)	(.0000000000, .0000000000)	.03320	(.7230989-016, .1112071-015)
24	(-.00000003, .00000000)	(.0000000000, .0000000000)	.03320	(.3482733-016, .2751845-015)
25	(-.00000001, .00000000)	(.0000000000, .0000000000)	.03300	(.2115325-016, .6338889-016)
26	(.00000000, .00000000)	(.0000000000, .0000000000)	.03320	(.1648137-016, .1707480-016)
27	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.2024732-016, .7610214-017)

TABLE 1 FOR Z=(1.0, 1.0)

N	JN	BESL. EQ.	TIME	REL. ERROR
1	(.61410033, .36502803)	(.0000000000, .0000000000)	.02280	(.3857303-035, .6489920-035)
2	(.04157999, .24739764)	(.0000000000, .0000000000)	.02320	(.2120380-035, .3563702-036)
3	(-.03620528, .04660748)	(.0000000000, .0000000000)	.02360	(.8609542-037, .6688001-037)
4	(-.01037328, .00104063)	(.0000000000, .0000000000)	.02400	(.1011816-037, .1008602-036)
5	(-.00112001, -.00095183)	(.0000000000, .0000000000)	.02460	(.2997840-038, .3544233-038)
6	(-.00001239, -.00017322)	(.0000000000, .0000000000)	.02520	(.8366335-038, .5987284-039)
7	(.00001100, -.00001315)	(.0000000000, .0000000000)	.03200	(.2633186-039, .2323028-039)
8	(.00000155, -.00000009)	(.0000000000, .0000000000)	.02680	(.5583415-040, .1003999-038)
9	(.00000009, .00000008)	(.0000000000, .0000000000)	.02720	(.2602364-040, .2876534-040)
10	(.00000000, .00000001)	(.0000000000, .0000000000)	.02760	(.1573043-039, .7155059-041)
11	(.00000000, .00000000)	(.0000000000, .0000000000)	.02820	(.4147570-041, .3815582-041)
12	(.00000000, .00000000)	(.0000000000, .0000000000)	.02880	(.1162835-041, .3021894-040)
13	(.00000000, .00000000)	(.0000000000, .0000000000)	.02920	(.6879693-042, .7389523-042)
14	(.00000000, .00000000)	(.0000000000, .0000000000)	.02960	(.6823323-041, .2275278-042)
15	(.00000000, .00000000)	(.0000000000, .0000000000)	.03020	(.1556886-042, .1462500-042)
16	(.00000000, .00000000)	(.0000000000, .0000000000)	.03680	(.5170504-043, .1757467-041)
17	(.00000000, .00000000)	(.0000000000, .0000000000)	.03100	(.3557108-043, .3760424-043)
18	(.00000000, .00000000)	(.0000000000, .0000000000)	.03160	(.5050759-042, .1329452-043)
19	(.00000000, .00000000)	(.0000000000, .0000000000)	.03180	(.1017708-043, .9680532-044)
20	(.00000000, .00000000)	(.0000000000, .0000000000)	.03840	(.3792511-044, .1592555-042)
21	(.00000000, .00000000)	(.0000000000, .0000000000)	.03260	(.2898050-044, .3032866-044)
22	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.5437397-043, .1182229-044)
23	(.00000000, .00000000)	(.0000000000, .0000000000)	.03320	(.9817957-045, .9417167-045)
24	(.00000000, .00000000)	(.0000000000, .0000000000)	.03320	(.3979072-045, .1989272-043)
25	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.3286305-045, .3415196-045)
26	(.00000000, .00000000)	(.0000000000, .0000000000)	.03320	(.7732323-044, .1432075-045)
27	(.00000000, .00000000)	(.0000000000, .0000000000)	.03920	(.1265357-046, .1220954-045)

TABLE 2 FOR Z=(1.0, 9.0)

N	JN	BESL. EQ.	TIME	REL. ERROR
1	(836.40934830, 598.33271369)	(-.0000000056, .0000000078)	.02280	(.4740937-010, .6627356-010)
2	(-488.54308327, 713.12806864)	(-.0000001009, .0000001772)	.02320	(.1934209-010, .1325070-010)
3	(-547.16010271, -349.06364939)	(-.0000000443, -.0000000190)	.02360	(.3909659-011, .6128422-011)
4	(218.63579445, -378.34436559)	(.0000000031, -.0000000103)	.02380	(.2109549-011, .1219056-011)
5	(-236.28561531, 120.17911128)	(.0000000023, .0000000004)	.03080	(.4017241-012, .7898347-012)
6	(-57.91657288, 133.66248430)	(.0000000000, .0000000005)	.02520	(.3226350-012, .1397992-012)
7	(-68.71793924, -24.33838345)	(-.0000000001, .0000000000)	.02600	(.5129911-013, .1483399-012)
8	(8.78623793, -32.22683810)	(.0000000000, .0000000000)	.02660	(.7266310-013, .1981067-013)
9	(13.83885543, 2.62072892)	(.0000000000, .0000000000)	.02720	(.8033787-014, .4242271-013)
10	(-.57090277, 5.46194225)	(.0000000000, .0000000000)	.02760	(.3265664-013, .3413395-014)
11	(-1.98847068, -.03534667)	(.0000000000, .0000000000)	.03460	(.1516119-014, .8529116-013)
12	(-.04793463, -.66999630)	(.0000000000, .0000000000)	.02880	(.9818515-014, .7025206-015)
13	(.20957157, -.03447243)	(.0000000000, .0000000000)	.02920	(.3389649-015, .2060702-014)
14	(.01601561, .06102032)	(.0000000000, .0000000000)	.02980	(.6478269-015, .1700309-015)
15	(-.01657697, .00608994)	(.0000000000, .0000000000)	.03020	(.8855727-016, .2410550-015)
16	(-.00202811, -.00420959)	(.0000000000, .0000000000)	.03060	(.9931194-016, .4784679-016)
17	(.00100062, -.00060960)	(.0000000000, .0000000000)	.03100	(.2680529-016, .439927-016)
18	(.00016315, .00022280)	(.0000000000, .0000000000)	.03740	(.2063484-016, .1557341-016)
19	(-.00000467, .00004302)	(.0000000000, .0000000000)	.03200	(.9391424-017, .1014503-016)
20	(-.00001020, -.00000907)	(.0000000000, .0000000000)	.03220	(.5194819-017, .5890185-017)
21	(.00000165, -.00000231)	(.0000000000, .0000000000)	.03260	(.3856329-017, .2757593-017)
22	(.00000049, .00000028)	(.0000000000, .0000000000)	.03300	(.1512256-017, .2652751-017)
23	(-.00000004, .00000010)	(.0000000000, .0000000000)	.03320	(.1940129-017, .8544748-018)
24	(-.00000002, -.00000001)	(.0000000000, .0000000000)	.03940	(.4964202-018, .1544112-017)
25	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.1411360-017, .2960522-018)
26	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.1810115-018, .1767793-017)
27	(.00000000, .00000000)	(.0000000000, .0000000000)	.03320	(.3676066-018, .1133574-018)

TABLE 3 FOR Z=(2.0, -8.0)

N	JN	BESL. EQ.	TIME	REL. ERROR
1	(375.2248307, 124.04942485)	(-.0000000006, -.0000000001)	.02260	(.3991673-011, .1207402-010)
2	(118.19933724, -305.96493159)	(-.0000000058, .0000000008)	.02320	(.2749808-011, .1062297-011)
3	(-217.33558577, -104.42208163)	(-.0000000001, .0000000013)	.02340	(.3083054-012, .0416816-012)
4	(-82.84297110, 134.12415005)	(.0000000002, .0000000001)	.02380	(.1588040-012, .9808669-013)
5	(71.60862374, 58.01084974)	(.0000000000, .0000000000)	.02440	(.3443131-013, .4250203-013)
6	(35.65627427, -32.81668984)	(.0000000000, .0000000000)	.02520	(.1239594-013, .1346855-013)
7	(-12.69401698, -19.25494131)	(.0000000000, .0000000000)	.02580	(.5981486-014, .3943542-014)
8	(-9.16944443, 3.97940386)	(.0000000000, .0000000000)	.02640	(.1365746-014, .3146988-014)
9	(.88895974, 3.86746364)	(.0000000000, .0000000000)	.03300	(.2234045-014, .5134971-015)
10	(1.45014064, -.04946248)	(.0000000000, .0000000000)	.02760	(.2091293-015, .6131251-014)
11	(-.08046646, -.48446360)	(.0000000000, .0000000000)	.02800	(.5549789-015, .9217863-016)
12	(-.14416832, -.05574784)	(.0000000000, .0000000000)	.02860	(.4404007-016, .1138911-015)
13	(-.02482667, .03804868)	(.0000000000, .0000000000)	.02920	(.3514816-016, .2293409-016)
14	(-.00879302, .00390348)	(.0000000000, .0000000000)	.02960	(.1319015-016, .1303539-016)
15	(.00274380, -.00173140)	(.0000000000, .0000000000)	.03020	(.5450118-017, .8636960-017)
16	(-.00026720, -.00074719)	(.0000000000, .0000000000)	.03680	(.6992625-017, .2500563-017)
17	(-.00018233, .00002225)	(.0000000000, .0000000000)	.03100	(.1242689-017, .1018269-016)
18	(-.00000414, .00004013)	(.0000000000, .0000000000)	.03140	(.6452408-017, .6650936-018)
19	(.00000738, .00000272)	(.0000000000, .0000000000)	.03180	(.3831949-018, .1123324-017)
20	(.00000039, -.00000143)	(.0000000000, .0000000000)	.03200	(.3841309-018, .2389589-018)
21	(-.00000023, -.00000023)	(.0000000000, .0000000000)	.03260	(.1636692-018, .1636211-018)
22	(-.00000005, .00000003)	(.0000000000, .0000000000)	.03900	(.7903741-019, .1275196-018)
23	(.00000000, .00000001)	(.0000000000, .0000000000)	.03300	(.1248349-018, .4183074-019)
24	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.2388868-019, .2623761-018)
25	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.1018890-018, .1463228-019)
26	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.9617554-020, .2429949-019)
27	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.9741434-020, .6835184-020)

TABLE 4 FOR Z=(2.0, -2.0)

N	JN	BESL. EQ.	TIME	REL. ERROR
1	(1.61701879, .27260958)	(.0000000000, .0000000000)	.02300 (.5033851-025, .2985893-024)	
2	(-.64455012, -.83518078)	(.0000000000, .0000000000)	.02320 (.9399832-026, .7254313-026)	
3	(-.13728788, -.46324024)	(.0000000000, .0000000000)	.02360 (.3120539-026, .9248164-027)	
4	(-.15562160, -.06561140)	(.0000000000, .0000000000)	.02400 (.1853906-027, .4397220-027)	
5	(-.04270250, .02077424)	(.0000000000, .0000000000)	.02460 (.4340018-028, .8927392-028)	
6	(-.00314526, .01071575)	(.0000000000, .0000000000)	.02540 (.3625602-028, .1064178-028)	
7	(.00114845, .00193723)	(.0000000000, .0000000000)	.03220 (.5845875-029, .3468636-029)	
8	(.00038003, .00008765)	(.0000000000, .0000000000)	.02660 (.9796054-030, .4336761-029)	
9	(.00005207, -.00003452)	(.0000000000, .0000000000)	.02720 (.3971060-030, .5989809-030)	
10	(.00000160, -.00000868)	(.0000000000, .0000000000)	.02760 (.6783323-030, .1246924-030)	
11	(-.00000056, -.00000092)	(.0000000000, .0000000000)	.02820 (.8309070-031, .5916235-031)	
12	(-.00000013, -.00000002)	(.0000000000, .0000000000)	.02880 (.2018514-031, .1301766-030)	
13	(-.000000001, .000000001)	(.0000000000, .0000000000)	.03540 (.1079858-031, .1442669-031)	
14	(.00000000, .00000000)	(.0000000000, .0000000000)	.02960 (.2937341-031, .3939656-032)	
15	(.00000000, .00000000)	(.0000000000, .0000000000)	.03020 (.2984018-032, .2317835-032)	
16	(.00000000, .00000000)	(.0000000000, .0000000000)	.03060 (.8937595-033, .7562080-032)	
17	(.00000000, .00000000)	(.0000000000, .0000000000)	.03100 (.5681583-033, .7108556-033)	
18	(.00000000, .00000000)	(.0000000000, .0000000000)	.03140 (.2172516-032, .2295302-033)	
19	(.00000000, .00000000)	(.0000000000, .0000000000)	.03180 (.1903294-033, .1556192-033)	
20	(.00000000, .00000000)	(.0000000000, .0000000000)	.03840 (.6542024-034, .6848427-033)	
21	(.00000000, .00000000)	(.0000000000, .0000000000)	.03260 (.4683933-034, .5633558-034)	
22	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300 (.2337779-033, .2037973-034)	
23	(.00000000, .00000000)	(.0000000000, .0000000000)	.03320 (.1807736-034, .1529029-034)	
24	(.00000000, .00000000)	(.0000000000, .0000000000)	.03320 (.6855765-035, .8551468-034)	
25	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300 (.5356938-035, .6251668-035)	
26	(.00000000, .00000000)	(.0000000000, .0000000000)	.03320 (.3323565-034, .2466401-035)	
27	(.00000000, .00000000)	(.0000000000, .0000000000)	.03940 (.2304899-035, .1997092-035)	

TABLE 5 FOR Z=(3.0, 3.0)

N	JN	BESL. EQ.	TIME	REL. ERROR
1	(1.63645140, -3.27863344)	(.0000000000, .0000000000)	.02280	(.7242798-019, .3615069-019)
2	(2.81910682, 45706761)	(.0000000000, .0000000000)	.02320	(.4694081-020, .2895221-019)
3	(.54766468, 1.70394064)	(.0000000000, .0000000000)	.02360	(.2562852-020, .8237282-021)
4	(-.56750130, .69920815)	(.0000000000, .0000000000)	.02380	(.2498380-021, .2027771-021)
5	(-.37205574, -.01499473)	(.0000000000, .0000000000)	.03080	(.3674522-022, .9117401-021)
6	(-.07758073, -.10410641)	(.0000000000, .0000000000)	.02540	(.1625257-022, .1211183-022)
7	(.00867736, -.03805257)	(.0000000000, .0000000000)	.02600	(.1284383-022, .2928858-023)
8	(.00904053, -.00493009)	(.0000000000, .0000000000)	.02660	(.1046044-023, .1918199-023)
9	(.00228407, .00079732)	(.0000000000, .0000000000)	.02720	(.3378102-024, .9677122-024)
10	(.00020055, .00046987)	(.0000000000, .0000000000)	.02780	(.2978224-024, .1290180-024)
11	(-.00003035, .0009040)	(.0000000000, .0000000000)	.03420	(.1167016-024, .5080415-025)
12	(-.00001633, .00000590)	(.0000000000, .0000000000)	.02880	(.2051264-025, .5689620-025)
13	(-.00000254, -.00000127)	(.0000000000, .0000000000)	.02920	(.9358693-026, .1869803-025)
14	(-.00000013, -.00000041)	(.0000000000, .0000000000)	.02980	(.1280017-025, .3958631-026)
15	(.00000003, -.00000005)	(.0000000000, .0000000000)	.03020	(.3671314-026, .2025699-026)
16	(.00000001, .00000000)	(.0000000000, .0000000000)	.03060	(.8913030-027, .3288601-026)
17	(.00000000, .00000000)	(.0000000000, .0000000000)	.03100	(.5002759-027, .8433107-027)
18	(.00000000, .00000000)	(.0000000000, .0000000000)	.03780	(.9433886-027, .2276868-027)
19	(.00000000, .00000000)	(.0000000000, .0000000000)	.03200	(.2198095-027, .1379365-027)
20	(.00000000, .00000000)	(.0000000000, .0000000000)	.03220	(.6464366-028, .2970573-027)
21	(.00000000, .00000000)	(.0000000000, .0000000000)	.03260	(.4176110-028, .6362117-028)
22	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.1013182-027, .2007912-028)
23	(.00000000, .00000000)	(.0000000000, .0000000000)	.03320	(.2012091-028, .1370366-028)
24	(.00000000, .00000000)	(.0000000000, .0000000000)	.03940	(.6739441-029, .3703726-028)
25	(.00000000, .00000000)	(.0000000000, .0000000000)	.03320	(.4823376-029, .0867126-029)
26	(.00000000, .00000000)	(.0000000000, .0000000000)	.03320	(.1438715-028, .2420254-029)
27	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.2504348-029, .1805657-029)

TABLE 6 FOR Z=(3.0, 7.0)

N	JN	BESL. EQ.	TIME	REL. ERROR
1	(47.81930300, -143.39837964)	(-.0000000001, .0000000000)	.02280	(.1936095-011, .6456338-012)
2	(121.55481076, 29.07368380)	(-.0000000003, -.0000000001)	.02300	(.1526472-012, .6382059-012)
3	(-8.63452095, 90.73199178)	(.0000000000, -.0000000001)	.02340	(.4091444-012, .3893628-013)
4	(-58.53201287, 5.33710468)	(.0000000000, .0000000000)	.02380	(.1094425-013, .1200256-012)
5	(-10.43255000, -32.00986708)	(.0000000000, .0000000000)	.02460	(.1062797-013, .3463834-014)
6	(14.50320517, -9.30291697)	(.0000000000, .0000000000)	.02520	(.1265702-014, .1973231-014)
7	(5.96139327, 5.23091388)	(.0000000000, .0000000000)	.02580	(.4885648-015, .5567911-015)
8	(-1.34795422, 3.01812283)	(.0000000000, .0000000000)	.02660	(.3291082-015, .1469863-015)
9	(-1.24884122, -.13021101)	(.0000000000, .0000000000)	.03320	(.5202562-016, .4989727-015)
10	(-.09763321, -.42635367)	(.0000000000, .0000000000)	.02760	(.9385365-016, .2149190-016)
11	(.11871503, -.07518031)	(.0000000000, .0000000000)	.02820	(.1049719-016, .1657550-016)
12	(.03310203, .02560061)	(.0000000000, .0000000000)	.02860	(.4943041-017, .6391552-017)
13	(-.00340301, .01107691)	(.0000000000, .0000000000)	.02920	(.5991552-017, .1874999-017)
14	(-.00300008, .00017328)	(.0000000000, .0000000000)	.02960	(.8487582-018, .1472316-016)
15	(-.00030124, -.00066848)	(.0000000000, .0000000000)	.03020	(.1007785-017, .4541389-018)
16	(.00011800, -.00011989)	(.0000000000, .0000000000)	.03680	(.2968762-018, .2921981-018)
17	(.00003003, .00001433)	(.0000000000, .0000000000)	.03100	(.1169954-018, .2737066-018)
18	(-.00000021, .00000749)	(.0000000000, .0000000000)	.03140	(.2081042-017, .5698850-019)
19	(-.00000037, .00000050)	(.0000000000, .0000000000)	.03180	(.3288167-019, .8957239-019)
20	(-.00000000, -.00000020)	(.0000000000, .0000000000)	.03200	(.2552859-019, .2299890-019)
21	(.00000002, -.00000004)	(.0000000000, .0000000000)	.03260	(.2200357-019, .1073724-019)
22	(.00000001, .00000000)	(.0000000000, .0000000000)	.03880	(.5565224-020, .8085115-019)
23	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.1039430-019, .3422541-020)
24	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.2543368-020, .2981362-020)
25	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.1315283-020, .2557021-020)
26	(.00000000, .00000000)	(.0000000000, .0000000000)	.03280	(.8493679-020, .7199387-021)
27	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.4679409-021, .1476276-020)

TABLE 7 FOR Z=(4.0, -6.0)

N	JN	BESL. EQ.	TIME	REL. ERROR
1	(-32.22960124, 47.40785875)	(.0000000000, .0000000000)	.02280	(.4249562-012, .2889008-012)
2	(35.84847449, 31.83102460)	(.0000000000, .0000000000)	.02320	(.7250142-013, .8165195-013)
3	(28.56865306, -21.06824757)	(.0000000000, .0000000000)	.02360	(.1640095-013, .2223978-013)
4	(-8.07722973, -21.77652881)	(.0000000000, .0000000000)	.02380	(.9959759-014, .3694219-014)
5	(-13.43785005, .21140240)	(.0000000000, .0000000000)	.02460	(.9811388-015, .0236635-013)
6	(-2.50350432, 6.43393374)	(.0000000000, .0000000000)	.02540	(.8255735-015, .3212384-015)
7	(2.21839936, 2.26122276)	(.0000000000, .0000000000)	.03200	(.1399667-015, .1373160-015)
8	(1.23980097, -.41520159)	(.0000000000, .0000000000)	.02660	(.3611956-016, .1078542-015)
9	(.07404110, -.48336754)	(.0000000000, .0000000000)	.02720	(.8387291-016, .1284745-016)
10	(-.13337033, -.10029888)	(.0000000000, .0000000000)	.02780	(.6217893-017, .8268112-017)
11	(-.04776726, .02128389)	(.0000000000, .0000000000)	.02820	(.2235557-017, .5017242-017)
12	(-.00149431, .01506243)	(.0000000000, .0000000000)	.02860	(.8881257-017, .8814440-018)
13	(.00329007, .00238392)	(.0000000000, .0000000000)	.03500	(.4841090-018, .6693430-018)
14	(.00093530, -.00040637)	(.0000000000, .0000000000)	.02980	(.1984253-018, .4566987-018)
15	(.00003131, -.00023742)	(.0000000000, .0000000000)	.03020	(.6678347-018, .8807497-019)
16	(-.00004121, -.00003314)	(.0000000000, .0000000000)	.03060	(.5544707-019, .6894014-019)
17	(-.00001037, .00000370)	(.0000000000, .0000000000)	.03100	(.2335275-019, .6543035-019)
18	(-.00000046, .00000212)	(.0000000000, .0000000000)	.03140	(.5472510-019, .1175459-019)
19	(.00000029, .00000028)	(.0000000000, .0000000000)	.03200	(.8563107-020, .8845050-020)
20	(.00000007, -.00000002)	(.0000000000, .0000000000)	.03840	(.3468724-020, .1410253-019)
21	(.00000000, -.00000001)	(.0000000000, .0000000000)	.03260	(.5956318-020, .1984878-020)
22	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.1698435-020, .1385195-020)
23	(.00000000, .00000000)	(.0000000000, .0000000000)	.03320	(.6274902-021, .5323557-020)
24	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.8440259-021, .4089166-021)
25	(.00000000, .00000000)	(.0000000000, .0000000000)	.03320	(.4226955-021, .2589736-021)
26	(.00000000, .00000000)	(.0000000000, .0000000000)	.03940	(.1345513-021, .6234720-020)
27	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.1485065-021, .1002987-021)

TABLE 8 FOR Z= (4.0, -4.0)

N	JN	BESL. EQ.	TIME	REL. ERROR
1	(-4.33745399, 7.59139379)	(.0000000000, .0000000000)	.02280	(.6448081-015, .3684204-015)
2	(5.40211717, 4.84169783)	(.0000000000, .0000000000)	.02340	(.7707129-016, .8599218-016)
3	(4.61766281, -2.46948615)	(.0000000000, .0000000000)	.02340	(.1275115-016, .2384323-016)
4	(-.08675375, -3.23056533)	(.0000000000, .0000000000)	.02400	(.9141112-016, .2454815-017)
5	(-1.47365323, -.84783493)	(.0000000000, .0000000000)	.03060	(.6917759-018, .1202564-017)
6	(-.69576712, .32845512)	(.0000000000, .0000000000)	.02540	(.1802075-018, .3817339-018)
7	(-.06242013, .29686694)	(.0000000000, .0000000000)	.02600	(.2364986-018, .4977471-019)
8	(.06690074, .08172180)	(.0000000000, .0000000000)	.02640	(.2498539-019, .2045680-019)
9	(.03285010, .00039612)	(.0000000000, .0000000000)	.02700	(.5535187-020, .4591088-018)
10	(.00612152, -.00690448)	(.0000000000, .0000000000)	.02780	(.3110433-020, .2759292-020)
11	(-.00026227, -.00234476)	(.0000000000, .0000000000)	.03460	(.6817817-020, .8207601-021)
12	(-.00045317, -.00031988)	(.0000000000, .0000000000)	.02880	(.4141902-021, .5867864-021)
13	(-.00011751, .00002562)	(.0000000000, .0000000000)	.02920	(.1504652-021, .6907261-021)
14	(-.00001233, .00002090)	(.0000000000, .0000000000)	.02960	(.1309357-021, .7723947-022)
15	(.00000129, .00000438)	(.0000000000, .0000000000)	.03020	(.1108308-021, .3255134-022)
16	(.00000072, .00000037)	(.0000000000, .0000000000)	.03060	(.1700819-022, .3345098-022)
17	(.00000013, -.00000004)	(.0000000000, .0000000000)	.03100	(.8051597-023, .2268162-022)
18	(.00000001, -.00000002)	(.0000000000, .0000000000)	.03760	(.9557274-023, .1278731-023)
19	(.00000000, .00000000)	(.0000000000, .0000000000)	.03180	(.5484841-023, .2225710-023)
20	(.00000000, .00000000)	(.0000000000, .0000000000)	.03240	(.1201466-023, .3000416-023)
21	(.00000000, .00000000)	(.0000000000, .0000000000)	.03260	(.6758926-024, .1506144-023)
22	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.1021022-023, .3701348-024)
23	(.00000000, .00000000)	(.0000000000, .0000000000)	.03320	(.4581478-024, .2225000-024)
24	(.00000000, .00000000)	(.0000000000, .0000000000)	.03920	(.1234539-024, .3725729-024)
25	(.00000000, .00000000)	(.0000000000, .0000000000)	.03320	(.7856605-025, .1517507-024)
26	(.00000000, .00000000)	(.0000000000, .0000000000)	.03320	(.1445208-024, .4411634-025)
27	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.5404426-025, .2950359-025)

TABLE 9 FOR Z=(5.0, 5.0)

N	JN	BESL. EQ.	TIME	REL. ERROR
1	(-21.41287416, -1.36141081)	(.0000000000, .0000000000)	.02260	(.3219888-012, .5064382-011)
2	(-1.87891399, -18.37175618)	(.0000000000, .0000000000)	.02320	(.6828262-012, .6983392-013)
3	(13.31266010, -5.23572606)	(.0000000000, .0000000000)	.02360	(.1703645-013, .4331768-013)
4	(6.72504201, 7.24275688)	(.0000000000, .0000000000)	.02380	(.5677836-014, .5271982-014)
5	(-2.13836109, 5.64989796)	(.0000000000, .0000000000)	.02460	(.2869643-014, .1086099-014)
6	(-3.21351103, .54550806)	(.0000000000, .0000000000)	.02540	(.2935334-015, .1729164-014)
7	(-1.06323059, -1.13907505)	(.0000000000, .0000000000)	.02600	(.1306927-015, .1219913-015)
8	(.13027474, -.65168191)	(.0000000000, .0000000000)	.02660	(.1508467-015, .3015508-016)
9	(.22858513, -.11205559)	(.0000000000, .0000000000)	.03340	(.1166999-016, .2384757-016)
10	(.08019241, .03780861)	(.0000000000, .0000000000)	.02780	(.4363181-017, .9255040-017)
11	(.00702092, .02727598)	(.0000000000, .0000000000)	.02820	(.6286045-017, .1619890-017)
12	(-.00472764, .00673493)	(.0000000000, .0000000000)	.02880	(.1139407-017, .7998154-018)
13	(-.00221141, .00023418)	(.0000000000, .0000000000)	.02920	(.2870698-018, .2710831-017)
14	(-.00041316, -.00037639)	(.0000000000, .0000000000)	.02960	(.1752415-018, .1923580-018)
15	(.00000068, -.00013124)	(.0000000000, .0000000000)	.03620	(.1176678-016, .0095005-019)
16	(.00002146, -.00001938)	(.0000000000, .0000000000)	.03060	(.3993418-019, .4421915-019)
17	(.00000098, .00000055)	(.0000000000, .0000000000)	.03120	(.1491530-019, .1624846-018)
18	(.00000072, .00000093)	(.0000000000, .0000000000)	.03140	(.1252312-019, .9668072-020)
19	(-.00000003, .00000022)	(.0000000000, .0000000000)	.03180	(.2527275-019, .4097937-020)
20	(-.00000003, .00000002)	(.0000000000, .0000000000)	.03220	(.2643494-020, .3906075-020)
21	(-.00000001, .00000000)	(.0000000000, .0000000000)	.03260	(.1240309-020, .5614030-020)
22	(.00000000, .00000000)	(.0000000000, .0000000000)	.03920	(.1322677-020, .7987969-021)
23	(.00000000, .00000000)	(.0000000000, .0000000000)	.03320	(.1503874-020, .4076562-021)
24	(.00000000, .00000000)	(.0000000000, .0000000000)	.03320	(.2625888-021, .4808010-021)
25	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.1438784-021, .4574495-021)
26	(.00000000, .00000000)	(.0000000000, .0000000000)	.03340	(.1859362-021, .9279011-022)
27	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.1532491-021, .5404398-022)

TABLE 10 FOR Z=(6.0, -4.0)

N	JN	BESL. EQ.	TIME	REL. ERROR
1	(-5.25591113, -5.89332304)	(.0000000000, .0000000000)	.02280	(.2605860-011, .2324015-011)
2	(-6.06656933, 3.64311620)	(.0000000000, .0000000000)	.02320	(.4284242-012, .7134182-012)
3	(1.33499720, 5.70812456)	(.0000000000, .0000000000)	.02360	(.3509769-012, .8208531-013)
4	(4.35627918, .92481489)	(.0000000000, .0000000000)	.02400	(.1846697-013, .8698742-013)
5	(2.11706673, -2.17366209)	(.0000000000, .0000000000)	.02460	(.6227672-014, .6065523-014)
6	(-.24146212, -1.80437365)	(.0000000000, .0000000000)	.02540	(.8559632-014, .1145454-014)
7	(-.78582322, -.54758954)	(.0000000000, .0000000000)	.03200	(.3951297-015, .5670344-015)
8	(-.43823290, .07353477)	(.0000000000, .0000000000)	.02660	(.1021860-015, .6089806-015)
9	(-.11372629, .14398259)	(.0000000000, .0000000000)	.02720	(.5460516-016, .4313050-016)
10	(.00267153, .06803883)	(.0000000000, .0000000000)	.02760	(.3104146-015, .1218837-016)
11	(.01521625, .01714013)	(.0000000000, .0000000000)	.02820	(.7017923-017, .6230199-017)
12	(.00694794, .00122131)	(.0000000000, .0000000000)	.02860	(.1910881-017, .1087085-016)
13	(.00176948, -.00093107)	(.0000000000, .0000000000)	.03540	(.9017669-018, .1713788-017)
14	(.00022234, -.00047556)	(.0000000000, .0000000000)	.02980	(.8335620-018, .3902479-018)
15	(-.00002137, -.00012583)	(.0000000000, .0000000000)	.03020	(.8081723-018, .1661891-018)
16	(-.00002184, -.00001970)	(.0000000000, .0000000000)	.03080	(.1045993-018, .1160010-018)
17	(-.00000029, -.00000066)	(.0000000000, .0000000000)	.03100	(.3849810-019, .3658134-018)
18	(-.00000011, .00000064)	(.0000000000, .0000000000)	.03140	(.2238999-019, .3914105-019)
19	(-.00000010, .00000022)	(.0000000000, .0000000000)	.03200	(.2428817-019, .1115367-019)
20	(.00000031, .00000004)	(.0000000000, .0000000000)	.03840	(.2915193-019, .5515803-020)
21	(.00000031, .00000001)	(.0000000000, .0000000000)	.03260	(.4126729-020, .4263869-020)
22	(.00000030, .00000000)	(.0000000000, .0000000000)	.03300	(.1678029-020, .1062114-019)
23	(.00000030, .00000000)	(.0000000000, .0000000000)	.03320	(.1051319-020, .2156591-020)
24	(.00000030, .00000000)	(.0000000000, .0000000000)	.03300	(.1126837-020, .6284459-021)
25	(.00000030, .00000000)	(.0000000000, .0000000000)	.03300	(.3310887-020, .3259027-021)
26	(.00000030, .00000000)	(.0000000000, .0000000000)	.03900	(.3010955-021, .2554441-021)
27	(.00000030, .00000000)	(.0000000000, .0000000000)	.03320	(.1230104-021, .4567547-021)

TABLE 11 FOR Z=(7.0, 3.0)

N	JN	BESL. EQ.	TIME	REL. ERROR
1	(.51305100, 2.80119635)	(.0000000000, .0000000000)	.02260	(.1804554-009, .3305118-010)
2	(-2.49278530, .96906203)	(.0000000003, -.0000000001)	.02320	(.7443478-011, .1914738-010)
3	(-1.51596930, -1.81762449)	(.0000000001, .0000000000)	.02340	(.2330368-011, .1943617-011)
4	(.83092470, -1.81479963)	(.0000000000, .0000000000)	.02980	(.7709353-012, .3529807-012)
5	(1.56728825, -.27842675)	(.0000000000, .0000000000)	.02460	(.7074433-013, .3982263-012)
6	(.91661818, .66810018)	(.0000000000, .0000000000)	.02520	(.2002667-013, .2747613-013)
7	(.17490901, .67708470)	(.0000000000, .0000000000)	.02580	(.1665167-013, .4301569-014)
8	(-.13077955, .34928124)	(.0000000000, .0000000000)	.02640	(.3392142-014, .1270102-014)
9	(-.13838650, .10562076)	(.0000000000, .0000000000)	.02700	(.4694880-015, .6151418-015)
10	(-.07152096, .00901523)	(.0000000000, .0000000000)	.02760	(.1281184-015, .1016408-014)
11	(-.02492221, -.00987266)	(.0000000000, .0000000000)	.03440	(.5000162-016, .1262224-015)
12	(-.00588622, -.00686908)	(.0000000000, .0000000000)	.02860	(.2779843-016, .2382088-016)
13	(-.00065467, -.00271697)	(.0000000000, .0000000000)	.02900	(.3172490-016, .7644257-017)
14	(.00017807, -.00077616)	(.0000000000, .0000000000)	.02960	(.1432647-016, .3286951-017)
15	(.00013235, -.00016380)	(.0000000000, .0000000000)	.03000	(.2293802-017, .1853314-017)
16	(.00004694, -.00002230)	(.0000000000, .0000000000)	.03040	(.7462984-018, .1570859-017)
17	(.00001202, -.00000001)	(.0000000000, .0000000000)	.03080	(.3263421-018, .3254629-015)
18	(.00000237, .00000111)	(.0000000000, .0000000000)	.03720	(.1799778-018, .3850519-018)
19	(.00000035, .00000041)	(.0000000000, .0000000000)	.03180	(.1303086-018, .1095108-018)
20	(.00000003, .00000010)	(.0000000000, .0000000000)	.03220	(.1675972-018, .4588775-019)
21	(.00000000, .00000002)	(.0000000000, .0000000000)	.03240	(.1485826-018, .2425533-019)
22	(.00000000, .00000000)	(.0000000000, .0000000000)	.03280	(.2384681-019, .1592072-019)
23	(.00000000, .00000000)	(.0000000000, .0000000000)	.03320	(.8810223-020, .1414018-019)
24	(.00000000, .00000000)	(.0000000000, .0000000000)	.03920	(.4343994-020, .3223414-019)
25	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.2631837-020, .8890182-020)
26	(.00000000, .00000000)	(.0000000000, .0000000000)	.03280	(.1980817-020, .2312512-020)
27	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.2124561-020, .1008477-020)

TABLE 12 FOR Z=(6.0, -6.0)

N	JN	BESL. EQ.	TIME	REL. ERROR
1	(-32.06801299, -42.90433829)	(.0000000003, -.0000000052)	.02280	(.1269952-009, .9492008-010)
2	(-41.34637065, 22.91969086)	(-.0000000007, -.0000000180)	.02320	(.2199401-010, .3967649-010)
3	(10.64599049, 36.76210869)	(-.0000000029, -.0000000027)	.02340	(.1812016-010, .5247444-011)
4	(28.28832055, .78435873)	(-.0000000008, .0000000000)	.02400	(.1377711-011, .4968788-010)
5	(7.68998406, -17.38032251)	(-.0000000001, .0000000001)	.02460	(.9773572-012, .4324351-012)
6	(-7.39639841, -8.85964077)	(.0000000000, .0000000000)	.02520	(.1874420-012, .1564844-012)
7	(-6.22674109, 1.12428332)	(.0000000000, .0000000000)	.02600	(.3935966-013, .2179899-012)
8	(-1.17979744, 2.90677267)	(.0000000000, .0000000000)	.02660	(.3525340-013, .1430861-013)
9	(.77798154, 1.17835032)	(.0000000000, .0000000000)	.02720	(.8723726-014, .5759661-014)
10	(.57924428, .02772512)	(.0000000000, .0000000000)	.02780	(.1841120-014, .3846541-013)
11	(.14121706, -.16673465)	(.0000000000, .0000000000)	.02820	(.1144287-014, .7691615-015)
12	(-.01466015, -.07450738)	(.0000000000, .0000000000)	.02880	(.1611922-014, .3172934-015)
13	(-.02153459, -.01161241)	(.0000000000, .0000000000)	.02920	(.1552525-015, .2879075-015)
14	(-.00683191, .00268887)	(.0000010000, .0000000000)	.02980	(.6697418-016, .1701688-015)
15	(-.00066807, .00194531)	(.0000000000, .0000000000)	.03040	(.8913774-016, .3118513-016)
16	(.00026721, .00047297)	(.0000000000, .0000000000)	.03080	(.2918797-016, .1049019-016)
17	(.00013103, .00002851)	(.0000000000, .0000000000)	.03100	(.7379407-017, .3414209-016)
18	(.00002370, -.00001853)	(.0000000000, .0000000000)	.03140	(.4590936-017, .6366303-017)
19	(.00000030, -.00000701)	(.0000000000, .0000000000)	.03180	(.1739815-016, .1984210-017)
20	(-.00000008, -.00000113)	(.0000000000, .0000000000)	.03220	(.1630552-017, .1414254-017)
21	(-.00000030, -.00000001)	(.0000000000, .0000000000)	.03260	(.5919830-018, .1842109-016)
22	(-.00000004, .00000004)	(.0000000000, .0000000000)	.03320	(.4744373-018, .4712974-018)
23	(.00000000, .00000001)	(.0000000000, .0000000000)	.03320	(.5375142-017, .1926710-018)
24	(.00000000, .00000000)	(.0000000000, .0000000000)	.03320	(.1500647-018, .1712202-018)
25	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.6754278-019, .7211888-018)
26	(.00000000, .00000000)	(.0000000000, .0000000000)	.03320	(.5583848-019, .5177867-019)
27	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.1757008-016, .2525202-019)

TABLE 13 FOR Z=(8.0, -2.0)

N	JN	BESL. EQ.	TIME	REL. ERROR
1	(.92107273, -.45000975)	(.0000000024, .0000000003)	.02260	(.1626120-008, .3326317-008)
2	(-.29203216, -.92552471)	(.00000000062, .00000000005)	.02300	(.1112978-008, .3511797-009)
3	(-.94961437, -.01988801)	(.0000000013, -.00000000002)	.02340	(.7056099-010, .3369151-008)
4	(-.37477421, .74390710)	(.00000000003, -.00000000001)	.02360	(.3510325-010, .1768473-010)
5	(.42184873, .63185371)	(.00000000000, .00000000000)	.02440	(.5844699-011, .3902135-011)
6	(.68522551, .12352336)	(.00000000000, .00000000000)	.02520	(.6450312-012, .3578215-011)
7	(.50193431, -.21562279)	(.00000000000, .00000000000)	.03200	(.1512800-012, .3521551-012)
8	(.23027450, -.27198774)	(.00000000000, .00000000000)	.02640	(.5438352-013, .4604302-013)
9	(.05951730, -.18798965)	(.00000000000, .00000000000)	.02700	(.3336730-013, .1056405-013)
10	(-.00471393, -.09459885)	(.00000000000, .00000000000)	.02740	(.6433419-013, .3205820-014)
11	(-.01490232, -.03736876)	(.00000000000, .00000000000)	.02800	(.2984604-014, .1195041-014)
12	(-.00983266, -.01180194)	(.00000000000, .00000000000)	.02840	(.6457145-015, .5379779-015)
13	(-.00440691, -.00289516)	(.00000000000, .00000000000)	.03540	(.1952192-015, .3014035-015)
14	(-.00162591, -.00047201)	(.00000000000, .00000000000)	.02960	(.7138184-016, .2458835-015)
15	(-.00049731, .00000131)	(.00000000000, .00000000000)	.03000	(.3006990-016, .1141160-013)
16	(-.00013046, .00003784)	(.00000000000, .00000000000)	.03040	(.1432201-016, .4938095-016)
17	(-.00002013, .00001835)	(.00000000000, .00000000000)	.03100	(.7698526-017, .1234750-016)
18	(-.00000562, .00000613)	(.00000000000, .00000000000)	.03140	(.4750889-017, .4352501-017)
19	(-.00000066, .00000167)	(.00000000000, .00000000000)	.03180	(.3568359-017, .1826194-017)
20	(-.00000008, .00000039)	(.00000000000, .00000000000)	.03820	(.4122682-017, .8652609-018)
21	(.00000000, .00000008)	(.00000000000, .00000000000)	.03240	(.7921238-017, .4532785-018)
22	(.00000000, .00000001)	(.00000000000, .00000000000)	.03260	(.7885538-018, .2607882-018)
23	(.00000000, .00000000)	(.00000000000, .00000000000)	.03300	(.2526031-018, .1655241-018)
24	(.00000000, .00000000)	(.00000000000, .00000000000)	.03320	(.1061359-018, .1182668-018)
25	(.00000000, .00000000)	(.00000000000, .00000000000)	.03300	(.5159085-019, .1007536-018)
26	(.00000000, .00000000)	(.00000000000, .00000000000)	.03900	(.2781337-019, .1266800-018)
27	(.00000000, .00000000)	(.00000000000, .00000000000)	.03260	(.1634922-019, .4078016-018)

TABLE 14 FOR Z=(7.0, 7.0)

N	JN	BESL. EQ.	TIME	REL. ERROR
1	(46.79823538, 127.04731350)	(-.0000001841, .0000018206)	.02280	(.1917642-007, .7063687-008)
2	(-108.57072618, 54.86120542)	(-.0000003341, .0000063006)	.02320	(.2153345-008, .4261486-008)
3	(-62.14381335, -80.35247520)	(-.0000011987, .0000010924)	.02360	(.9310683-009, .7200790-009)
4	(47.50089053, -62.66491763)	(-.0000003949, -.0000000162)	.03020	(.2871054-009, .2176300-009)
5	(53.47865501, 17.40058483)	(-.0000000624, -.0000000671)	.02460	(.5737505-010, .1763355-009)
6	(3.12713792, 36.89486750)	(.0000000007, -.000000202)	.02520	(.2111600-009, .1789752-010)
7	(-19.17407832, 11.54318338)	(.0000000031, -.0000000029)	.02600	(.7102578-011, .1179791-010)
8	(-10.75803347, -6.17760520)	(.0000000009, .0000000000)	.02660	(.2506344-011, .4364690-011)
9	(-.18093303, -6.30840822)	(.0000000001, .0000000001)	.02720	(.2836982-010, .8136984-012)
10	(2.41459002, -1.70057248)	(.0000000000, .0000000000)	.02780	(.3897258-012, .5533595-012)
11	(1.20096174, .42960464)	(.0000000000, .0000000000)	.03420	(.1385155-012, .3972207-012)
12	(.14772659, .48843990)	(.0000000000, .0000000000)	.02880	(.1921976-012, .5813015-013)
13	(-.11038713, .15447189)	(.0000000000, .0000000000)	.02920	(.4243808-013, .3032668-013)
14	(-.06585720, .00344124)	(.0000000000, .0000000000)	.02980	(.1135779-013, .2173604-012)
15	(-.01444432, -.01587541)	(.0000000000, .0000000000)	.03020	(.8009986-014, .7287923-014)
16	(.00088614, -.00650787)	(.0000000000, .0000000000)	.03080	(.1958366-013, .2666606-014)
17	(.00150165, -.00102519)	(.0000000000, .0000000000)	.03720	(.1584294-014, .2464312-014)
18	(.00049033, .00014538)	(.0000000000, .0000000000)	.03160	(.7191383-015, .2457531-014)
19	(.00005075, .00012149)	(.0000000000, .0000000000)	.03200	(.8656870-015, .4043593-015)
20	(-.00001205, .00003034)	(.0000000000, .0000000000)	.03220	(.5035684-015, .2165962-015)
21	(-.00000034, .00000249)	(.0000000000, .0000000000)	.03260	(.1165505-015, .3440987-015)
22	(-.00000012, -.00000084)	(.0000000000, .0000000000)	.03300	(.7146286-016, .1286895-015)
23	(-.00000009, -.00000036)	(.0000000000, .0000000000)	.03320	(.1551326-015, .3703590-016)
24	(.00000004, -.00000006)	(.0000000000, .0000000000)	.03940	(.3789553-016, .2546579-016)
25	(.00000001, .00000000)	(.0000000000, .0000000000)	.03300	(.1276200-016, .8105061-016)
26	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.9695893-017, .1239037-016)
27	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.5274267-016, .4711326-017)

TABLE 15 FOR Z(9.0, 1.0)

N	JN	BESL. EQ.	TIME	REL. ERROR
1	(.3687700, -.14213813)	(.0000000417, .0000000753)	.02300	(.4075269-006, .2789796-006)
2	(.23264074, .24507589)	(.0000001082, .0000001953)	.02320	(.4061819-007, .3855723-007)
3	(-.25460802, .23838409)	(.0000000197, .0000000481)	.02340	(.8399300-008, .8973792-008)
4	(-.38292004, -.06945546)	(.0000000032, .0000000111)	.02400	(.1204489-008, .6640558-008)
5	(-.08830070, -.26201132)	(.0000000004, .0000000024)	.02460	(.1074873-008, .3622806-009)
6	(.25404227, -.20734848)	(.0000000000, .0000000005)	.02520	(.7355434-010, .9011839-010)
7	(.39255517, -.04825872)	(.0000000000, .0000000001)	.02600	(.8979992-011, .7304731-010)
8	(.34091759, .06617272)	(.0000000000, .0000000000)	.02660	(.1872697-011, .9648014-011)
9	(.21903312, .09794396)	(.0000000000, .0000000000)	.03340	(.5075756-012, .1135123-011)
10	(.11331615, .07924479)	(.0000000000, .0000000000)	.02760	(.1645288-012, .2352680-012)
11	(.04903205, .04836993)	(.0000000000, .0000000000)	.02820	(.6148473-013, .6232713-013)
12	(.01805704, .02439579)	(.0000000000, .0000000000)	.02880	(.2606663-013, .1929375-013)
13	(.00567245, .01060717)	(.0000000000, .0000000000)	.02920	(.1252318-013, .6697113-014)
14	(.00149352, .00407486)	(.0000000000, .0000000000)	.02960	(.6946921-014, .2546184-014)
15	(.00030077, .00140559)	(.0000000000, .0000000000)	.03640	(.4754367-014, .1044412-014)
16	(.00000741, .00044033)	(.0000000000, .0000000000)	.03060	(.5384293-014, .4574215-015)
17	(-.00000055, .00012633)	(.0000000000, .0000000000)	.03120	(.4830982-014, .2123152-015)
18	(-.00000075, .00003340)	(.0000000000, .0000000000)	.03140	(.6039028-015, .1038716-015)
19	(-.000000248, .00000818)	(.0000000000, .0000000000)	.03180	(.1756386-015, .5335233-016)
20	(-.000000083, .00000186)	(.0000000000, .0000000000)	.03220	(.6460852-016, .2869361-016)
21	(-.000000024, .00000039)	(.0000000000, .0000000000)	.03260	(.2693239-016, .1613361-016)
22	(-.000000006, .00000008)	(.0000000000, .0000000000)	.03900	(.1220651-016, .9481234-017)
23	(-.000000001, .00000001)	(.0000000000, .0000000000)	.03320	(.5892149-017, .5930552-017)
24	(.000000000, .00000000)	(.0000000000, .0000000000)	.03320	(.2992897-017, .3764496-017)
25	(.000000000, .00000000)	(.0000000000, .0000000000)	.03300	(.1587362-017, .2569093-017)
26	(.000000000, .00000000)	(.0000000000, .0000000000)	.03300	(.8743930-018, .1877670-017)
27	(.000000000, .00000000)	(.0000000000, .0000000000)	.03300	(.4983292-018, .1510244-017)

TABLE 16 FOR $Z_2(8.0, -8.0)$

N	JN	BESL. EQ.	TIME	REL. ERROR
1	(336.94890361, -75.95002010)	(-.0000686669, -.0002975568)	.02300	(.2852010-006, .1265282-005)
2	(-38.27182079, -312.17128893)	(-.0000697569, -.0010071152)	.02320	(.7475794-006, .9165233-007)
3	(-268.47403260, -11.66076305)	(-.0002219538, -.0001965876)	.02360	(.3014249-007, .6939921-006)
4	(-58.03315800, 207.12073798)	(-.0000824400, .0000044115)	.02400	(.3756306-007, .1052479-007)
5	(135.89708342, 86.20455380)	(-.0000147050, .0000161755)	.02460	(.4124576-008, .6502184-008)
6	(89.09096804, -68.30721285)	(.0000002353, .0000055144)	.03140	(.1547401-008, .2018227-008)
7	(-17.84843647, -70.61672208)	(.0000009773, .0000009049)	.02580	(.1820540-008, .4601430-009)
8	(-42.91873567, -9.09980000)	(.0000003077, -.0000000107)	.02660	(.1713122-009, .8079854-009)
9	(-15.9705010, 18.59818441)	(.0000000467, -.0000000498)	.02720	(.1001656-009, .8601346-010)
10	(4.02896024, 12.05594250)	(-.0000000004, -.0000000146)	.02780	(.8318685-010, .2780014-010)
11	(5.9367662, 1.50795027)	(-.0000000022, -.0000000021)	.02820	(.1140550-010, .490329-010)
12	(2.06067050, -1.81943752)	(-.0000000006, .0000000000)	.02860	(.6409621-011, .7259472-011)
13	(-.11660359, -1.14609181)	(-.0000000001, .0000000001)	.03520	(.2135805-010, .2173084-011)
14	(-.3877070, -.23245224)	(.0000000000, .0000000000)	.02980	(.1172026-011, .1955129-011)
15	(-.15519231, .06070657)	(.0000000000, .0000000000)	.03020	(.5176815-012, .1323423-011)
16	(-.0170433, .05529054)	(.0000000000, .0000000000)	.03060	(.8080500-012, .2490832-012)
17	(.0105230, .01578765)	(.0000000000, .0000000000)	.03100	(.2177082-012, .1451355-012)
18	(.0058601, .00062356)	(.0000000000, .0000000000)	.03140	(.6319752-013, .5939137-012)
19	(.00125715, -.00119963)	(.0000000000, .0000000000)	.03180	(.4628945-013, .4850897-013)
20	(-.00002314, -.00048694)	(.0000000000, .0000000000)	.03840	(.3539688-012, .1827115-013)
21	(-.00010234, -.00008056)	(.0000000000, .0000000000)	.03260	(.1290446-013, .1644034-013)
22	(-.000003201, .00000605)	(.0000000000, .0000000000)	.03300	(.5855269-014, .3173569-013)
23	(-.00000124, .00000698)	(.0000000000, .0000000000)	.03320	(.6411029-014, .3891299-014)
24	(.00000059, .00000184)	(.0000000000, .0000000000)	.03320	(.6773957-014, .2041893-014)
25	(.00000039, .00000019)	(.0000000000, .0000000000)	.03300	(.1292889-014, .2719831-014)
26	(.00000009, -.00000004)	(.0000000000, .0000000000)	.03960	(.7646560-015, .1876381-014)
27	(.00000001, -.00000002)	(.0000000000, .0000000000)	.03300	(.1248838-014, .4648287-015)

TABLE 17 FOR Z=(9.0, 9.0)

N	JN	BESL. EQ.	TIME	REL. ERROR
1	(533.81320074, -621.22017556)	(-.0091614383, .0270374154)	.02280	(.9356040-005, .9545701-005)
2	(620.63016019, 530.64875963)	(-.0077568972, .0884860869)	.02340	(.3200327-005, .3743003-005)
3	(-377.97299388, 601.22475567)	(-.0222716973, .0190984212)	.02340	(.1672107-005, .1051206-005)
4	(-546.21290026, -204.24931825)	(-.0091672422, -.0006208584)	.02400	(.3506478-006, .9377183-006)
5	(44.4341825, -449.24089960)	(-.0018151484, -.0020479703)	.02460	(.1246868-005, .1233271-006)
6	(321.32027351, -70.01461944)	(.0000419079, -.0007760730)	.02520	(.4770890-007, .2189519-006)
7	(123.10291158, 188.35096809)	(.0001562593, -.0001417527)	.02580	(.3302064-007, .2158171-007)
8	(-79.07836710, 120.76310681)	(.0000548027, .0000024178)	.02660	(.1308530-007, .8568544-008)
9	(-86.04980314, -10.71410258)	(.0000092825, .0000100596)	.02720	(.2943375-008, .2363957-007)
10	(-17.68554486, -45.42739995)	(-.0000001206, .0000032813)	.02760	(.3375521-008, .1314139-008)
11	(15.92431522, -20.11018084)	(-.0000005540, .0000005179)	.03420	(.8520556-009, .6747031-009)
12	(12.56948783, 1.38523810)	(-.0000001688, -.0000000053)	.02880	(.2368867-009, .2149482-008)
13	(2.68198475, 5.19784914)	(-.00000000249, -.00000000264)	.02920	(.2355093-009, .1215180-009)
14	(-1.18750459, 2.24878824)	(.0000000002, -.00000000075)	.02980	(.1091930-009, .5766094-010)
15	(-1.03109906, .14749527)	(.0000000011, -.0000000010)	.03000	(.2500964-010, .1748355-009)
16	(-.28516841, -.28446436)	(.00000000003, .00000000000)	.03060	(.1743894-010, .1748210-010)
17	(.01841653, -.14624363)	(.0000000000, .00000000000)	.03100	(.5053750-010, .6364921-011)
18	(.04372109, -.02656427)	(.0000000000, .00000000000)	.03140	(.3871137-011, .6371352-011)
19	(.01589205, .00567293)	(.0000000000, .00000000000)	.03180	(.1882316-011, .5274088-011)
20	(.00181131, .00498423)	(.0000000000, .00000000000)	.03860	(.2841113-011, .1032482-011)
21	(-.00079386, .00137801)	(.0000000000, .00000000000)	.03260	(.1085621-011, .6254187-012)
22	(-.00044829, .00008348)	(.0000000000, .00000000000)	.03300	(.3137089-012, .1684537-011)
23	(-.00009769, -.00007812)	(.0000000000, .00000000000)	.03300	(.2285790-012, .2864255-012)
24	(-.00000149, -.00003296)	(.0000000000, .00000000000)	.03920	(.2328190-011, .1053556-012)
25	(.00000000, -.00000581)	(.0000000000, .00000000000)	.03300	(.8765441-013, .9057725-013)
26	(.00000203, .00000015)	(.0000000000, .00000000000)	.03300	(.3836873-013, .5208070-012)
27	(.00000029, .00000038)	(.0000000000, .00000000000)	.03320	(.3851584-013, .2981417-013)

TABLE 18. EDR Z=(10.0, -1.0)

N	JN	BESL. EQ.	TIME	REL. ERROR
1	(.05220533,	.29346758) (.0000036026, -.0000027811)	.02300	(.2913733-004, .5183278-005)
2	(.38622072,	.01272424) (.0000093286, -.0000071817)	.02320	(.1041588-005, .3161621-004)
3	(.10025059,	-.27313210) (.0000022248, -.0000020915)	.02340	(.1008195-005, .3700579-006)
4	(-.31044774,	-.16902532) (.0000004943, -.0000005662)	.02380	(.7790500-007, .1430876-006)
5	(-.33276014,	.11466073) (.0000001021, -.0000001434)	.02440	(.1660066-007, .4817782-007)
6	(-.03037125,	.24960385) (.0000000195, -.0000000342)	.02520	(.3973371-007, .4635189-008)
7	(.26702052,	.17828948) (.0000000034, -.0000000077)	.02600	(.9463250-009, .1417289-008)
8	(.37578712,	.03454275) (.0000000005, -.0000000016)	.02640	(.1351551-009, .1470340-008)
9	(.32281403,	-.06403757) (.0000000001, -.0000000003)	.03340	(.3040735-010, .1532842-009)
10	(.21093604,	-.09113774) (.0000000000, -.0000000001)	.02780	(.8660492-011, .2004476-010)
11	(.11293277,	-.07466313) (.0000000000, .0000000000)	.02840	(.2903032-011, .4391021-011)
12	(.05131000,	-.04689561) (.0000000000, .0000000000)	.02880	(.1106997-011, .1211357-011)
13	(.02015117,	-.02457794) (.0000000000, .0000000000)	.02920	(.4721866-012, .3871404-012)
14	(.00688100,	-.01118689) (.0000000000, .0000000000)	.02980	(.2240260-012, .1378712-012)
15	(.00203042,	-.00452661) (.0000000000, .0000000000)	.03620	(.1189314-012, .5350456-013)
16	(.00050001,	-.00165360) (.0000000000, .0000000000)	.03080	(.7250890-013, .2230235-013)
17	(.00000000,	-.00055137) (.0000000000, .0000000000)	.03120	(.5508482-013, .9885308-014)
18	(.00001000,	-.00016919) (.0000000000, .0000000000)	.03140	(.7762020-013, .4625209-014)
19	(-.00000071,	-.00004808) (.0000000000, .0000000000)	.03180	(.4031889-013, .2271927-014)
20	(-.00000019,	-.00001271) (.0000000000, .0000000000)	.03220	(.6786503-014, .1166755-014)
21	(-.000000091,	-.00000314) (.0000000000, .0000000000)	.03260	(.2149929-014, .6245094-015)
22	(-.000000030,	-.00000073) (.0000000000, .0000000000)	.03920	(.8364933-015, .3476188-015)
23	(-.00000000,	-.00000016) (.0000000000, .0000000000)	.03320	(.3644102-015, .2009337-015)
24	(-.000000002,	-.00000003) (.0000000000, .0000000000)	.03300	(.1713544-015, .1205379-015)
25	(-.000000001,	-.00000001) (.0000000000, .0000000000)	.03320	(.8535989-016, .7506864-016)
26	(.000000000,	.00000000) (.0000000000, .0000000000)	.03300	(.4455163-016, .4860987-016)
27	(.000000000,	.00000000) (.0000000000, .0000000000)	.03300	(.2418791-016, .3283560-016)

TABLE 19 FOR Z=(9.0, 2.0)

N	JN	BESL. EQ.	TIME	REL. ERROR
1	(.85304274, -.46597136)	(.0000000747, -.0000001499)	.02260	(.8660826-007, .1595925-006)
2	(.59399100, .71707782)	(.0000002006, -.0000003909)	.02320	(.3042684-007, .2516120-007)
3	(-.54000817, .71386493)	(.0000000667, -.0000000807)	.02340	(.7700995-008, .5825472-008)
4	(-.83126408, -.18732718)	(.0000000186, -.0000000146)	.02380	(.1092908-008, .4873113-008)
5	(-.20277123, -.71531589)	(.0000000046, -.0000000022)	.02460	(.9433172-009, .2674030-009)
6	(.45225551, -.52235523)	(.0000000010, -.0000000002)	.03100	(.8476799-010, .7339218-010)
7	(.62991323, -.07607820)	(.0000000002, .0000000000)	.02580	(.1168970-010, .9678850-010)
8	(.45043716, .20207966)	(.0000000000, .0000000000)	.02340	(.2974695-011, .6718941-011)
9	(.21942208, .24658976)	(.0000000000, .0000000000)	.02700	(.1097108-011, .9762353-012)
10	(.00619351, .17495970)	(.0000000000, .0000000000)	.02760	(.6209117-012, .2349131-012)
11	(.00308640, .09276324)	(.0000000000, .0000000000)	.02800	(.2192376-011, .7294420-013)
12	(-.01098541, .03952643)	(.0000000000, .0000000000)	.02840	(.9791112-013, .2721201-013)
13	(-.00008145, .01388391)	(.0000000000, .0000000000)	.02900	(.1903769-013, .1190405-013)
14	(-.00142042, .00400616)	(.0000000000, .0000000000)	.02960	(.5559817-014, .6134736-014)
15	(-.00178445, .00090545)	(.0000000000, .0000000000)	.03000	(.1984035-014, .3910094-014)
16	(-.00000869, .00012960)	(.0000000000, .0000000000)	.03040	(.8125035-015, .3816041-014)
17	(-.00018034, -.00000803)	(.0000000000, .0000000000)	.03080	(.3718097-015, .8347956-014)
18	(-.00004697, -.00001424)	(.0000000000, .0000000000)	.03120	(.1880096-015, .6200836-015)
19	(-.00001077, -.00000647)	(.0000000000, .0000000000)	.03780	(.1049770-015, .1748676-015)
20	(-.00000215, -.00000215)	(.0000000000, .0000000000)	.03200	(.6546671-016, .6566027-016)
21	(-.00000036, -.00000060)	(.0000000000, .0000000000)	.03260	(.4722109-016, .2870075-016)
22	(-.00000005, -.00000014)	(.0000000000, .0000000000)	.03280	(.4392606-016, .1395126-016)
23	(.00000000, -.00000003)	(.0000000000, .0000000000)	.03300	(.1042761-015, .7391845-017)
24	(.00000000, -.00000001)	(.0000000000, .0000000000)	.03300	(.2550877-016, .4231982-017)
25	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.6215591-017, .2614708-017)
26	(.00000000, .00000000)	(.0000000000, .0000000000)	.03900	(.2402046-017, .1754221-017)
27	(.00000000, .00000000)	(.0000000000, .0000000000)	.03280	(.1115230-017, .1301403-017)

TABLE 20 FOR 2x(B.O. -3.0)

N	JN	BESL. EQ.	TIME	REL. ERROR
1	(2.47792513, -1.09173697)	(-.0000000044, .0000000077)	.02280	(.2092197-008, .4748677-008)
2	(-.62942479, -2.48071242)	(-.0000000111, .0000000214)	.02320	(.1851930-008, .4698855-009)
3	(-2.34604903, -.09915570)	(-.0000000007, .0000000053)	.02360	(.1061287-009, .2510779-008)
4	(-.88873098, 1.83702974)	(.0000000003, .0000000011)	.03020	(.5699172-010, .2757185-010)
5	(-.96293264, 1.41752679)	(.0000000001, .0000000002)	.02460	(.1021398-010, .0938404-011)
6	(1.36145437, .11215002)	(.0000000000, .0000000000)	.02520	(.1341811-011, .1628902-010)
7	(.77216624, -.59863968)	(.0000000000, .0000000000)	.02600	(.4211180-012, .5431867-012)
8	(.16766138, -.58635087)	(.0000000000, .0000000000)	.02660	(.3314147-012, .9476511-013)
9	(-.09263800, -.31923897)	(.0000000000, .0000000000)	.02720	(.9855417-013, .2859883-013)
10	(-.11425047, -.11190753)	(.0000000000, .0000000000)	.02780	(.1264369-013, .1290840-013)
11	(-.06579520, -.01994230)	(.0000000000, .0000000000)	.03460	(.3349739-014, .1105172-013)
12	(-.02634903, .00434139)	(.0000000000, .0000000000)	.02880	(.1232180-014, .7478418-014)
13	(-.00778826, .00537267)	(.0000000000, .0000000000)	.02920	(.5936186-015, .8605155-015)
14	(-.00150283, .00264532)	(.0000000000, .0000000000)	.02960	(.4025032-015, .2408468-015)
15	(-.00011272, .00092307)	(.0000000000, .0000000000)	.03020	(.7545632-015, .9214398-016)
16	(.00007427, .00025045)	(.0000000000, .0000000000)	.03060	(.1482571-015, .3396367-016)
17	(.00004001, .00005290)	(.0000000000, .0000000000)	.03700	(.3158105-016, .2615430-016)
18	(.00001505, .00000785)	(.0000000000, .0000000000)	.03160	(.1122173-016, .2150526-016)
19	(.00000394, .00000034)	(.0000000000, .0000000000)	.03200	(.5082218-017, .5818837-016)
20	(.00000003, .000000026)	(.0000000000, .0000000000)	.03220	(.2774467-017, .3072933-017)
21	(.00000014, -.00000012)	(.0000000000, .0000000000)	.03260	(.1841657-017, .2230784-017)
22	(.00000002, -.00000003)	(.0000000000, .0000000000)	.03300	(.1637287-017, .8064632-018)
23	(.00000000, .000000001)	(.0000000000, .0000000000)	.03320	(.3839669-017, .4400058-018)
24	(.00000000, .00000000)	(.0000000000, .0000000000)	.03940	(.9510888-018, .2591789-018)
25	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.2425496-018, .1822715-018)
26	(.00000000, .00000000)	(.0000000000, .0000000000)	.03320	(.1013003-018, .1654169-018)
27	(.00000000, .00000000)	(.0000000000, .0000000000)	.03320	(.5284884-019, .3006966-018)

TABLE 21 FOR Z=(8.0, 4.0)

N	JN	BESL. EQ.	TIME	REL. ERROR
1	(6.68116923, 2.57549712)	(-.0000000162, .0000000457)	.02280	(.3852680-008, .9994345-008)
2	(-1.39912000, 6.53156461)	(-.0000000499, .0000001274)	.02300	(.4330318-008, .9275975-009)
3	(-5.93450701, .31695407)	(-.0000000234, .0000000213)	.02340	(.2282849-009, .4274305-008)
4	(-2.06649131, -4.56104007)	(-.0000000067, .0000000019)	.02360	(.1396124-009, .6325482-010)
5	(2.45689794, -3.13918959)	(-.0000000014, -.0000000003)	.02440	(.2387056-010, .1868238-010)
6	(2.95379445, .19340150)	(-.0000000002, -.0000000002)	.02500	(.3860617-011, .5896267-010)
7	(1.20369630, 1.59899473)	(.0000000000, .0000000000)	.02580	(.1765321-011, .1328904-011)
8	(-.14932322, 1.20260370)	(.0000000000, .0000000000)	.03240	(.2545588-011, .3160772-012)
9	(-.48053065, .44462985)	(.0000000000, .0000000000)	.02700	(.1360618-012, .1470479-012)
10	(-.31546493, .03020761)	(.0000000000, .0000000000)	.02740	(.3432871-013, .3585025-012)
11	(-.12019170, -.06874965)	(.0000000000, .0000000000)	.02820	(.1439100-013, .2515910-013)
12	(-.02458138, -.04924596)	(.0000000000, .0000000000)	.02860	(.1085116-013, .5416415-014)
13	(.00210124, -.01994301)	(.0000000000, .0000000000)	.02920	(.1892347-013, .1993819-014)
14	(-.00411809, -.00533747)	(.0000000000, .0000000000)	.02960	(.1392742-014, .1074717-014)
15	(.00195803, -.00076807)	(.0000000000, .0000000000)	.03620	(.4092994-015, .1043742-014)
16	(.00060511, .00009530)	(.0000000000, .0000000000)	.03060	(.1795406-015, .1139964-014)
17	(.00013020, .00010487)	(.0000000000, .0000000000)	.03100	(.1097581-015, .1362684-015)
18	(.00001583, .00003991)	(.0000000000, .0000000000)	.03140	(.1153545-015, .4574873-016)
19	(-.00000137, .00001032)	(.0000000000, .0000000000)	.03160	(.1654359-015, .2197095-016)
20	(-.00000142, .00000192)	(.0000000000, .0000000000)	.03220	(.1926093-016, .1424888-016)
21	(-.00000047, .00000022)	(.0000000000, .0000000000)	.03260	(.6801810-017, .1471515-016)
22	(-.00000011, -.00000001)	(.0000000000, .0000000000)	.03900	(.3411025-017, .5283898-016)
23	(-.00000002, -.00000001)	(.0000000000, .0000000000)	.03300	(.2260423-017, .3614024-017)
24	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.2214227-017, .1267789-017)
25	(.00000000, .00000000)	(.0000000000, .0000000000)	.03280	(.2114927-016, .6435027-018)
26	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.8665028-018, .4262433-018)
27	(.00000000, .00000000)	(.0000000000, .0000000000)	.03280	(.2855340-018, .3933916-018)

TABLE 22 FOR 2- (8.0, -5.0)

N	JN	BESL. EQ.	TIME	REL. ERROR
1	(17.9107653, -6.02381185)	(.0000002598, .0000002331)	.02280	(.9284352-008, .2760542-007)
2	(-3.15625591, -17.14816892)	(.0000007750, .0000006825)	.02320	(.1307992-007, .2407462-008)
3	(-15.19207811, -.85109290)	(.0000002488, .0000000423)	.02360	(.6409069-009, .1144024-007)
4	(-4.75033917, 11.56822732)	(.0000000542, -.0000000220)	.02400	(.4603978-009, .1890563-009)
5	(6.57690059, 7.03483427)	(.0000000076, -.0000000104)	.02460	(.7129826-010, .6665709-010)
6	(6.71000583, -1.54989282)	(.0000000002, -.0000000027)	.03160	(.1433225-010, .6204913-010)
7	(1.70573008, -4.18302933)	(-.0000000003, -.0000000005)	.02580	(.1108105-010, .4518562-011)
8	(-1.27344004, -2.37255864)	(-.0000000001, -.0000000001)	.02660	(.2800500-011, .1503139-011)
9	(-1.40456605, -.37386043)	(.0000000000, .0000000000)	.02720	(.4606442-012, .1730606-011)
10	(-.62104915, .34731317)	(.0000000000, .0000000000)	.02760	(.1820049-012, .3254526-012)
11	(-.10216633, .30043564)	(.0000000000, .0000000000)	.02840	(.1863838-012, .6338180-013)
12	(.04768742, .12053375)	(.0000000000, .0000000000)	.02880	(.6495000-013, .2569652-013)
13	(.04252514, .02388988)	(.0000000000, .0000000000)	.03540	(.1145199-013, .2038510-013)
14	(.01680180, -.00258585)	(.0000000000, .0000000000)	.02960	(.4410348-014, .2885674-013)
15	(.00383020, -.00396820)	(.0000000000, .0000000000)	.03020	(.2851752-014, .2752655-014)
16	(.00021023, -.00165934)	(.0000000000, .0000000000)	.03060	(.7261068-014, .9409379-015)
17	(-.00022271, -.00041817)	(.0000000000, .0000000000)	.03120	(.9470865-015, .5180052-015)
18	(-.00011029, -.00005552)	(.0000000000, .0000000000)	.03140	(.2532442-015, .5258223-015)
19	(-.00003293, .00000537)	(.0000000000, .0000000000)	.03780	(.1194242-015, .7128171-015)
20	(-.00000058, .00000547)	(.0000000000, .0000000000)	.03240	(.8733595-016, .8913755-016)
21	(-.00000034, .00000176)	(.0000000000, .0000000000)	.03260	(.1780025-015, .3446206-016)
22	(.00000010, .00000036)	(.0000000000, .0000000000)	.03300	(.4716973-016, .2044359-016)
23	(.00000007, .00000004)	(.0000000000, .0000000000)	.03320	(.1256880-016, .1981619-016)
24	(.00000002, .00000000)	(.0000000000, .0000000000)	.03320	(.6123554-017, .2171418-015)
25	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.4411507-017, .6194498-017)
26	(.00000000, .00000000)	(.0000000000, .0000000000)	.03920	(.6028485-017, .2295047-017)
27	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.5899470-017, .1333187-017)

TABLE 23 FOR Z=(6.0, 8.0)

N	JN	BESL. EQ.	TIME	REL. ERROR
1	(-200.05811067, 305.03937839)	(.0000015543, .0000016885)	.02280	(.6388287-008, .4189717-008)
2	(-285.90905925, -149.98342054)	(.0000067824, .0000060931)	.02300	(.1176330-008, .2242404-008)
3	(83.44524216, -249.54450038)	(-.0000001949, .0000023650)	.02340	(.1007617-008, .3369372-009)
4	(196.16798026, 20.09368418)	(-.0000004936, .0000003141)	.03000	(.1020515-009, .9962955-009)
5	(23.57534912, 133.64195759)	(-.0000001285, -.0000000478)	.02460	(.1929909-009, .3404491-010)
6	(-75.10921072, 41.23121108)	(-.0000000088, -.0000000293)	.02520	(.1316873-010, .2398894-010)
7	(-38.07201820, -31.85064332)	(.0000000039, -.0000000053)	.02580	(.5412403-011, .6469605-011)
8	(7.45599491, -25.34509108)	(.0000000013, .0000000000)	.02620	(.5527394-011, .1626043-011)
9	(12.78805673, -2.02431760)	(.0000000002, .0000000002)	.02700	(.6197522-012, .3915110-011)
10	(3.44008901, 4.74402637)	(.0000000000, .0000000000)	.02760	(.4266377-012, .3093726-012)
11	(-1.06950772, 2.21300684)	(.0000000000, .0000000000)	.03400	(.2450513-012, .1184290-012)
12	(-.95594717, .05947624)	(.0000000000, .0000000000)	.02860	(.4721988-013, .7597476-012)
13	(-.19430181, -.29002248)	(.0000000000, .0000000000)	.02900	(.3876009-013, .2596749-013)
14	(.05058258, -.10776355)	(.0000000000, .0000000000)	.02960	(.2401092-013, .1127192-013)
15	(.03790166, -.00434092)	(.0000000000, .0000000000)	.03020	(.5007585-014, .4372279-013)
16	(.00721573, .00898518)	(.0000000000, .0000000000)	.03060	(.3985341-014, .3200510-014)
17	(-.00104569, .00312019)	(.0000000000, .0000000000)	.03720	(.4044231-014, .1355364-014)
18	(-.00086222, .00022427)	(.0000000000, .0000000000)	.03140	(.7008470-015, .2693794-014)
19	(-.00017037, -.00015315)	(.0000000000, .0000000000)	.03180	(.4925137-015, .5478718-015)
20	(.00000799, -.00005554)	(.0000000000, .0000000000)	.03200	(.1419079-014, .2041467-015)
21	(.00001181, -.00000572)	(.0000000000, .0000000000)	.03240	(.1263727-015, .2608485-015)
22	(.00000254, .00000146)	(.0000000000, .0000000000)	.03280	(.7522071-016, .1309106-015)
23	(.00000005, .00000063)	(.0000000000, .0000000000)	.03300	(.4750943-015, .3818866-016)
24	(-.00000010, .00000008)	(.0000000000, .0000000000)	.03920	(.2917047-016, .3569443-016)
25	(-.00000002, -.00000001)	(.0000000000, .0000000000)	.03300	(.1415563-016, .4963272-016)
26	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.2550365-016, .8807838-017)
27	(.00000000, .00000000)	(.0000000000, .0000000000)	.03300	(.8816154-017, .6368827-017)

TABLE 24 FOR 2x(5.0, -8.0)

N	JN	BESL. EQ.	TIME	REL. ERROR
1	(-373.83648469, -11.77559129)	(-.0000001445, .0000001643)	.02280	(.4448197-009, .1412157-007)
2	(-40.11033559, 323.14293509)	(-.00000006837, .0000007161)	.02320	(.1029250-008, .1277563-009)
3	(248.63670227, 69.97026750)	(.00000000588, .0000002360)	.02340	(.3916038-010, .1391549-009)
4	(86.18367557, -165.46124594)	(.00000000538, .0000000177)	.02400	(.2537657-010, .1321787-010)
5	(-90.91909015, -82.36011441)	(-.00000000097, -.00000000080)	.02460	(.5157569-011, .5693551-011)
6	(-63.23025718, 37.46648670)	(-.00000000003, -.00000000026)	.02520	(.1520941-011, .2566814-011)
7	(7.87866944, 39.41499657)	(-.00000000005, -.00000000002)	.02600	(.2399044-011, .4795453-012)
8	(19.82606002, 3.44880249)	(-.00000000001, .00000000001)	.03280	(.1798786-012, .1034065-011)
9	(4.98244062, -7.80105252)	(.00000000000, .00000000000)	.02720	(.1298571-012, .8293820-013)
10	(-2.16571815, -3.27603033)	(.00000000000, .00000000000)	.02760	(.5219238-013, .3450334-013)
11	(-1.526333908, 22669368)	(.00000000000, .00000000000)	.02820	(.1247570-013, .8399948-013)
12	(-.16906147, .53783512)	(.00000000000, .00000000000)	.02880	(.1832054-013, .5758825-014)
13	(.13811751, .13376039)	(.00000000000, .00000000000)	.02920	(.3525965-014, .3640820-014)
14	(.05819761, -.01966329)	(.00000000000, .00000000000)	.02980	(.1273283-014, .3768547-014)
15	(.00291891, -.01821652)	(.00000000000, .00000000000)	.03640	(.3742180-014, .5996251-015)
16	(-.00415131, -.00316749)	(.00000000000, .00000000000)	.03060	(.3757808-015, .4929245-015)
17	(-.00127742, .00057094)	(.00000000000, .00000000000)	.03120	(.1695704-015, .3793934-015)
18	(-.00003000, .00035405)	(.00000000000, .00000000000)	.03160	(.9730814-015, .8245522-016)
19	(.00007106, .00004803)	(.00000000000, .00000000000)	.03180	(.5382936-016, .7964445-016)
20	(.00001765, -.00000880)	(.00000000000, .00000000000)	.03220	(.2762365-016, .5543248-016)
21	(.00000024, -.00000432)	(.00000000000, .00000000000)	.03860	(.2514734-015, .1400024-016)
22	(-.00000076, -.00000050)	(.00000000000, .00000000000)	.03280	(.9604841-017, .1476051-016)
23	(-.00000016, .00000008)	(.00000000000, .00000000000)	.03320	(.5290333-017, .1042216-016)
24	(.00000000, .00000004)	(.00000000000, .00000000000)	.03300	(.4921983-016, .2814212-017)
25	(.00000001, .00000000)	(.00000000000, .00000000000)	.03320	(.2039874-017, .3071285-017)
26	(.00000000, .00000000)	(.00000000000, .00000000000)	.03300	(.1159749-017, .2380969-017)
27	(.00000000, .00000000)	(.00000000000, .00000000000)	.03300	(.8129326-017, .6506281-018)

TABLE 25 FOR Z+(B.O. 6.0)

N	JN	BESL. EQ.	TIME	REL. ERROR
1	(47.77790403, 14.03828260)	(-.0000025128, .0000017064)	.02280	(.2674937-007, .9103882-007)
2	(-7.19836507, 45.04135623)	(-.0000075044, .0000055279)	.02300	(.4672219-007, .7466990-008)
3	(-39.27145538, 2.10255909)	(-.0000024365, -.0000000210)	.02340	(.2141017-008, .3998976-007)
4	(-10.89501225, -29.89440392)	(-.0000004779, -.0000003610)	.02360	(.1837469-008, .6696654-009)
5	(17.94933335, -16.00537172)	(-.0000000393, -.0000001344)	.02440	(.2534818-009, .2842689-009)
6	(15.65125614, 6.32050636)	(.0000000109, -.0000000293)	.02520	(.6319577-010, .1564896-009)
7	(1.62663683, 10.80415341)	(.0000000056, -.0000000036)	.02580	(.1266792-009, .1907240-010)
8	(-4.75393403, 4.41377052)	(.0000000014, .0000000001)	.02640	(.8669077-011, .9337191-011)
9	(-3.47445269, -.59075047)	(.0000000002, .0000000002)	.02700	(.2281058-011, .1341586-010)
10	(-.88728836, -1.51204229)	(.0000000000, .0000000000)	.02760	(.1654109-011, .9706551-012)
11	(-24034057, -76377116)	(.0000000000, .0000000000)	.02800	(.1090470-011, .3431449-012)
12	(.30210983, -.14944450)	(.0000000000, .0000000000)	.02860	(.1495712-012, .3023660-012)
13	(.12451022, .04179957)	(.0000000000, .0000000000)	.03520	(.6048625-013, .1801731-012)
14	(-.02207875, .04215166)	(.0000000000, .0000000000)	.02960	(.5501683-013, .2881743-013)
15	(-.00423903, .01552787)	(.0000000000, .0000000000)	.03000	(.4477373-013, .1222301-013)
16	(-.00430226, .00274548)	(.0000000000, .0000000000)	.03040	(.6684200-014, .1047438-013)
17	(-.00150344, -.00023911)	(.0000000000, .0000000000)	.03080	(.2812883-014, .1768637-013)
18	(-.00027490, -.00032884)	(.0000000000, .0000000000)	.03120	(.2197870-014, .1837170-014)
19	(.00000149, -.00011423)	(.0000000000, .0000000000)	.03780	(.5625624-013, .7345732-015)
20	(.00001897, -.00002181)	(.0000000000, .0000000000)	.03200	(.5976948-015, .5199223-015)
21	(.00000687, -.00000109)	(.0000000000, .0000000000)	.03240	(.2170238-015, .1366110-014)
22	(.00000138, .00000082)	(.0000000000, .0000000000)	.03260	(.1390518-015, .2346351-015)
23	(-.00000012, .00000033)	(.0000000000, .0000000000)	.03300	(.1999775-015, .7242451-016)
24	(-.000000002, .00000007)	(.0000000000, .0000000000)	.03300	(.1193497-015, .4184330-016)
25	(-.000000001, .00000001)	(.0000000000, .0000000000)	.03300	(.2736264-016, .4441435-016)
26	(.000000000, .00000000)	(.0000000000, .0000000000)	.03900	(.1408143-016, .1108014-015)
27	(.000000000, .00000000)	(.0000000000, .0000000000)	.03300	(.1223756-016, .1182797-016)

TABLE 26 FOR Z-(9.0, -4.0)

N	JN	BESL. EQ.	TIME	REL. ERROR
1	(5.6281134, 3.89716409)	(.0000018873, -.0000004364)	.02280	(.1332549-006, .1924409-006)
2	(4.41358755, -4.72678838)	(.0000052392, -.0000011836)	.03320	(.4404093-007, .4112274-007)
3	(-3.21040237, -4.92342162)	(.0000011006, -.0000008124)	.02360	(.1490784-007, .9720914-008)
4	(-4.98265568, 1.19158814)	(.0000001644, -.0000002868)	.03000	(.2252422-008, .9418560-008)
5	(-.88116494, 4.16413671)	(-.0000000080, -.0000000756)	.02460	(.2850931-008, .6032800-009)
6	(2.44791018, 2.30867687)	(-.0000000051, -.0000000159)	.02540	(.2197235-009, .2329747-009)
7	(2.46423514, -.38231413)	(-.0000000023, -.0000000026)	.02600	(.4478519-010, .2086664-009)
8	(.97377249, -1.38263988)	(-.0000000006, -.0000000003)	.02640	(.2232415-010, .1572256-010)
9	(-.10637750, -1.02777560)	(-.0000000001, .0000000000)	.02720	(.3870483-010, .4006052-011)
10	(-.38854891, -.41281195)	(.0000000000, .0000000000)	.03380	(.1932686-011, .1819092-011)
11	(.27417763, -.05871990)	(.0000000000, .0000000000)	.02820	(.4816958-012, .2249156-011)
12	(-.11784099, .04421235)	(.0000000000, .0000000000)	.02880	(.1903121-012, .5072478-012)
13	(-.03198762, .04054578)	(.0000000000, .0000000000)	.02920	(.1150841-012, .9079285-013)
14	(.00279679, .01930323)	(.0000000000, .0000000000)	.02960	(.2090893-012, .3039435-013)
15	(.00243347, .00637352)	(.0000000000, .0000000000)	.03020	(.3698036-013, .1411946-013)
16	(.00168550, .00144798)	(.0000000000, .0000000000)	.03060	(.7966806-014, .9274196-014)
17	(.00066646, .00014994)	(.0000000000, .0000000000)	.03740	(.2944874-014, .1297158-013)
18	(.00018770, -.00004896)	(.0000000000, .0000000000)	.03160	(.1457959-014, .5589784-014)
19	(.00003916, -.00003482)	(.0000000000, .0000000000)	.03180	(.9558685-015, .1074974-014)
20	(.00000494, -.00001245)	(.0000000000, .0000000000)	.03220	(.1007602-014, .4000629-015)
21	(-.00000027, -.000000324)	(.0000000000, .0000000000)	.03280	(.2384572-014, .1992301-015)
22	(-.00000039, -.00000064)	(.0000000000, .0000000000)	.03300	(.2108813-015, .1265706-015)
23	(-.00000014, -.00000009)	(.0000000000, .0000000000)	.03320	(.7230989-016, .1112071-015)
24	(-.00000003, .00000000)	(.0000000000, .0000000000)	.03920	(.3482733-016, .2751845-015)
25	(-.00000001, .00000000)	(.0000000000, .0000000000)	.03300	(.2115325-016, .6338889-016)
26	(.00000000, .00000000)	(.0000000000, .0000000000)	.03340	(.1648137-016, .1707480-016)
27	(.00000000, .00000000)	(.0000000000, .0000000000)	.03320	(.2024732-016, .7610214-017)

APPENDIX A:

LISTING OF SUBROUTINE JNZ

```

T0XP 30
SUBROUTINE JNZ(JN,NP1,Z,EZ)
C
C COMPUTES BESSEL FUNCTION OF 1ST KIND FOR COMPLEX ARGUMENT FOR
C ABS(Z) EQUAL TO OR LESS THAN TEN.
C
C COMPLEX*16 Z,JN,EZ
C
C JN EQUAL COMPLEX VALUE OF BESSEL FUNCTION.
C NP1 EQUAL INTEGER ORDER OF BESSEL FUNCTION.
C Z EQUAL COMPLEX ARGUMENT.
C EZ IS A DOUBLE PRECISION COMPLEX NUMBER WITH THE REAL
C AND IMAGINARY PARTS BEING UPPER BOUNDS FOR THE MAGNITUDES
C OF THE RESPECTIVE PARTS FOR THE RELATIVE ERROR IN JN.
C
C DOUBLE PRECISION ZERO,X,Y,RHO,PHI,SI,CI,THETA,U,V,D,ARG,D1,D2,
1D3
C ZERO=0.0D0
C X=DREAL(Z)
C Y=DIMAG(Z)
C RHO=XX*2+Y**2
C RHO=DSQRT(RHO)
C PHI=DATAN2(Y,X)
C THETA=NP1*PHI
C SI=DSIN(THETA)
C CI=DCOS(THETA)
C D=NP1+1
C
C SERIES COMPUTATION FOR BOTH REAL AND IMAGINARY PARTS.
C U IS REAL PART.
C
29X

```

```

EDIT
30*P 30
C      U IS IMAGINARY PART.
C
      U=CI/DGAMMA(D)
      V=SI/DGAMMA(D)
      K=1
10  L=2*K
      X=D+K
      Y=K+1
      ARG=(NP1+L)*PHI
      U=U+(-1)**K*RHO**L*DCOS(ARG)/(2**K*2**K*DGAMMA(Y)*DGAMMA(X))
      V=V+(-1)**K*RHO**L*DSIN(ARG)/(2**K*2**K*DGAMMA(Y)*DGAMMA(X))
      D1=RHO**L/(2**K*2**K*DGAMMA(Y)*DGAMMA(X))
      IF(D1.EQ.ZERO) GO TO 20
      D2=D1/U
      D3=D1/V
      K=K+1
      GO TO 10
20  U=(RHO/2.)***NP1*XU
      V=(RHO/2.)***NP1*VU
      JN=DCMPLX(U,V)
      D2=DABS(D2)
      D3=DABS(D3)
      EZ=DCMPLX(D2,D3)
      RETURN
      END
EOF AT LINE 54
54*

```

APPENDIX B:
LISTING OF PROGRAM
FOR COMPUTING TABLES

```

0X>P 30
      COMPLEX*16 Z1,Z(26),JN,ZJ1,ZJ2,ZJ3,ZJ4,ZJ5,P,
      IEZ,EZ1,EZ2
C
C      ARGUMENTS FOR TABLES 1 THRU 26, RESPECTIVELY.
C
      DATA (Z(K),K=1,26)/(1.D0,1.D0),(1.D0,9.D0),(2.D0,-8.D0),
      1(2.D0,-2.D0),(3.D0,3.D0),(3.D0,7.D0),(4.D0,-6.D0),(4.D0,-4.D0),
      2(5.D0,5.D0),(6.D0,-4.D0),(7.D0,3.D0),(6.D0,-6.D0),(8.D0,-2.D0),
      3(7.D0,7.D0),(9.D0,1.D0),(8.D0,-8.D0),(9.D0,9.D0),(10.D0,-1.D0),
      4(9.D0,2.D0),(8.D0,-3.D0),(8.D0,4.D0),(8.D0,-5.D0),(6.D0,8.D0),
      5(5.D0,-8.D0),(8.D0,6.D0),(9.D0,-4.D0)/
C
      GENERATE TABLES 1 THRU 26.
C
      DO 20 I=1,26
      Z1=Z(I)
      WRITE(6,10) I,Z(I)
      10 FORMAT(1H1,38X,'TABLE',I3,' FOR Z=(',F5.1,',',F5.1,',',/,)
      WRITE(6,11)
      11 FORMAT(1H ,9X,'N',24X,'JN',27X,'BESL. EQ.',14X,'TIME',14X,
      1'REL. ERROR',/)
C
      COMPUTE JN(Z) FOR N=-1,0,1,2 AND DETERMINE COMPUTATIONAL
      TIME.
C
      NP1=1
      CALL JNZ(JN,NP1,Z1,EZ)
      ZJ1=--JN
      NP1=0
29X>

```

```

EDIT
30X>P 30 CALL JNZ(JN,NP1,Z1,EZ)
      ZJ2=JN
      NP1=1
      CALL SETCLK
      CALL JNZ(JN,NP1,Z1,EZ)
      CALL LKCLKS(TIME)
      ZJ3=JN
      NP1=2
      CALL SETCLK
      CALL JNZ(JN,NP1,Z1,EZ1)
      CALL LKCLKS(TIME1)
      ZJ4=JN
      DO 30 J=1,27
      NP1=NP1+1

      C
      C
      C
      C
      COMPUTE JN(Z) FOR N=3 THRU 29 AND DETERMINE COMPUTATIONAL
      TIME.

      CALL SETCLK
      CALL JNZ(JN,NP1,Z1,EZ2)
      CALL LKCLKS(TIME2)
      ZJ5=JN

      C
      C
      C
      EVALUATE BESSEL EQUATION.

      P=Z1**2/4.*X(ZJ1+2./Z1*XZJ2-2.*XZJ3-2./Z1*XZJ4+ZJ5)+(Z1**2-
      1(NP1-2)**2)*XZJ3
      ZJ1=EZ
      WRITE(6,15) J,ZJ3,P,TIME,ZJ1
      15 FORMAT(1H ,I10,' (',F14.8,',',F14.8,',',F14.10,',',
      59X>

```

```

EDIT
60X>P * 1F14.10,')',F10.5, ' ('',E14.7,')',E14.7,')',/),
        TIME=TIME1
        TIME1=TIME2
        EZ=EZ1
        EZ1=EZ2
        ZJ1=ZJ2
        ZJ2=ZJ3
        ZJ3=ZJ4
        ZJ4=ZJ5
        30 ZJ4=ZJ5
        20 CONTINUE
        STOP
        END
        EOF AT LINE 71
        71X>

```

3-83

DTIC