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A Table Associated With an Integral Transform Occurring in the Theory of Diffraction

RESUMEN

En este trabajo se dan los diez primeros ceros positivos u_n' de la función $J_{-u}(ka)$, considerada como una función de u. $J_{-v}(x)$ es la función de Bessel de primera clase de orden v.

SUMMARY

In this short note we give the positive zeros u_n' of the function $J_{-u}(ka)$, regarded as a function of u. $J_v(x)$ stands for the Bessel function of first kind of order v.

1. INTRODUCTION. In a recent paper D. Naylor[3] has considered an integral transform adapted to the solution of certain boundary value problems connected with the Helmholtz equation in cylindrical or spherical polar coordinates, when the radial variable r varies over some infinite interval $0 < a \leq r < \infty$. At infinity a radiation type boundary condition is imposed.

Precisely, suppose that f(r) is twice continuously differentiable for

$$r \geq a, r^{-\frac{1}{2}}(rf_{rr} + f_r + k^2 rf) \in L(a, \infty), \lim_{r \to \infty}$$

$$r^{\frac{1}{2}} f(r) e^{-ikr} \text{ exists} \quad \text{and} \quad \lim_{r \to \infty} r^{\frac{1}{2}}(f_r - ikf) = 0,$$

where k is real and positive. Let

$$G(u) = \int_a^{\infty} J_u(kr) H_u^{(1)}(ka) - J_u(ka) H_u^{(1)}(kr) f(r) \frac{dr}{r}$$

where $a > 0, k > 0$; then

$$f(r) = \frac{1}{2} \int_L \frac{u J_{-u}(kr) G(u) du}{J_{-u}(ka)}$$

$$+ i\pi \sum_{u=u_n'} \frac{u J_{-u}(kr) G(u)}{(\partial / \partial u) J_{-u}(ka)}$$

where L denotes the imaginary axis of the complex u-plane and the summation is extended over all the positive zeros u_n' of the function $J_u(ka)$, regarded as a function of u.

Thus to apply this interesting transform we need the positive zeros u_n' of the function $J_{-u}(ka)$[2,3,4] regarded as a function of u. As such zeros are not easily avaliable, in this note we attempt to give ten zeros upto eight decimal points.

2. TABLE. The following tables deals with the zeros of $J_{-u}(A) = 0$, with

A = .001, .002, .005, .010, .015, .020, .030, ..., 1.000

1.10, 1.20, ..., 2.00	55, 60, ..., 200
2.2, 2.4, ..., 3.0	225, 250, ..., 500
3.5, 4.0, ..., 5.0	550, 600, ..., 1000
6., 7., ..., 30.	1300, 2000, 3000, 4000, 5000.
32, 34, ..., 50	

Using the Fortran IV-H extended, the calculations are made at a terminal station cope 1200 of the IBM 370/145 computer.

First ten positive roots of

the equation

$$J_{-u} (A) = 0$$

considered as a function of u

```
A=   0.001
0.99999075   2.00000000   3.00000000   4.00000000   5.00000000
6.00000000   7.00000000   8.00000000   9.00000000   10.00000000

A=   0.002
0.99999900   2.00000000   3.00000000   4.00000000   5.00000000
6.00000000   7.00000000   8.00000000   9.00000000   10.00000000

A=   0.005
0.99999375   2.00000000   3.00000000   4.00000000   5.00000000
6.00000000   7.00000000   8.00000000   9.00000000   10.00000000

A=   0.010
0.99997500   2.00000000   3.00000000   4.00000000   5.00000000
6.00000000   7.00000000   8.00000000   9.00000000   10.00000000

A=   0.015
0.99994375   2.00000000   3.00000000   4.00000000   5.00000000
6.00000000   7.00000000   8.00000000   9.00000000   10.00000000

A=   0.020
0.99990000   2.00000000   3.00000000   4.00000000   5.00000000
6.00000000   7.00000000   8.00000000   9.00000000   10.00000000

A=   0.030
0.99977503   1.99999997   3.00000000   4.00000000   5.00000000
6.00000000   7.00000000   8.00000000   9.00000000   10.00000000

A=   0.040
0.99960008   1.99999992   3.00000000   4.00000000   5.00000000
6.00000000   7.00000000   8.00000000   9.00000000   10.00000000

A=   0.050
0.99937520   1.99999980   3.00000000   4.00000000   5.00000000
6.00000000   7.00000000   8.00000000   9.00000000   10.00000000

A=   0.060
0.99910049   1.99999960   3.00000000   4.00000000   5.00000000
6.00000000   7.00000000   8.00000000   9.00000000   10.00000000

A=   0.070
0.99877575   1.99999925   3.00000000   4.00000000   5.00000000
6.00000000   7.00000000   8.00000000   9.00000000   10.00000000

A=   0.080
0.99840128   1.99999872   3.00000000   4.00000000   5.00000000
6.00000000   7.00000000   8.00000000   9.00000000   10.00000000

A=   0.090
0.99797705   1.99999796   3.00000000   4.00000000   5.00000000
6.00000000   7.00000000   8.00000000   9.00000000   10.00000000

A=   0.100
0.99750312   1.99999689   3.00000000   4.00000000   5.00000000
6.00000000   7.00000000   8.00000000   9.00000000   10.00000000

A=   0.120
0.99640645   1.99999355   3.00000000   4.00000000   5.00000000
6.00000000   7.00000000   8.00000000   9.00000000   10.00000000

A=   0.150
0.99439072   1.99998430   2.99999999   4.00000000   5.00000000
6.00000000   7.00000000   8.00000000   9.00000000   10.00000000

A=   0.200
0.99004943   1.99995066   2.99999992   4.00000000   5.00000000
6.00000000   7.00000000   8.00000000   9.00000000   10.00000000

A=   0.300
0.97774670   1.99975424   2.99999907   4.00000000   5.00000000
6.00000000   7.00000000   8.00000000   9.00000000   10.00000000

A=   0.400
0.96076478   1.99924041   2.99999483   3.99999998   5.00000000
6.00000000   7.00000000   8.00000000   9.00000000   10.00000000

A=   0.500
0.93932287   1.99819663   2.99998060   3.99999990   5.00000000
6.00000000   7.00000000   8.00000000   9.00000000   10.00000000

A=   0.600
0.91367495   1.99638222   2.99994327   3.99999957   5.00000000
6.00000000   7.00000000   8.00000000   9.00000000   10.00000000

A=   0.700
0.88177531   1.99354568   2.99986048   3.99999854   4.99999999
6.00000000   7.00000000   8.00000000   9.00000000   10.00000000

A=   0.800
0.85286588   1.98944028   2.99969804   3.99999582   4.99999997
6.00000000   7.00000000   8.00000000   9.00000000   10.00000000

A=   0.900
0.81426591   1.98383687   2.99940780   3.99998953   4.99999980
6.00000000   7.00000000   8.00000000   9.00000000   10.00000000
```

A= 1.000

```
0.77456451  1.97653317  2.99692632  3.99997631  4.99999969
6.00000000  7.00000000  8.00000000  9.00000000  10.00000000
```

A= 1.800

```
0.37190886  1.84383050  2.97624929  3.99809947  4.99991440
5.99999753  6.99999995  8.00000000  9.00000000  10.00000000
```

A= 1.100

```
0.73201571  1.96735982  2.99817459  3.99905067  4.99909023
5.99999999  7.00000000  6.00000000  9.00000000  10.00000000
```

A= 1.900

```
0.31353464  1.81758836  2.96929833  3.99772445  4.99985889
5.99999544  6.99999990  8.00000000  9.00000000  10.00000000
```

A= 1.200

```
0.68685559  1.95618330  2.99705879  3.99990015  4.99999820
5.99999998  7.00000000  8.00000000  9.00000000  10.00000000
```

A= 2.000

```
0.25380582  1.78932135  2.96105888  3.99604800  4.99977432
5.99999184  6.99999979  8.00000000  9.00000000  10.00000000
```

A= 1.300

```
0.63930108  1.94290620  2.99547224  3.99982441  4.99999609
5.99999994  7.00000000  8.00000000  9.00000000  10.00000000
```

A= 2.200

```
0.13065819  1.72700125  2.94038732  3.99251036  4.99946737
5.99997625  6.99999927  7.99999998  9.00000000  10.00598800
```

A= 1.400

```
0.58954988  1.92746583  2.99329821  3.99969419  4.99999203
5.99999986  7.00000000  8.00000000  9.00000000  10.00000000
```

A= 2.400

```
0.00312650  1.65748111  2.91372831  3.98687340  4.99885512
5.99993793  6.99999769  7.99999990  9.00000000  10.00000000
```

A= 1.500

```
0.53778118  1.90983071  2.99041348  3.99949030  4.99998460
5.99999970  7.00000000  8.00000000  9.00000000  10.00000000
```

A= 2.600

```
1.58133583  2.88080092  3.97847697  4.99772924  5.99985203
6.99999345  7.99999079  8.99999990  10.00000000  11.00000000
```

A= 1.600

```
0.48415671  1.88999709  2.98669233  3.99918291  4.99997160
5.99999936  6.99999999  8.00000000  9.00000000  10.00000000
```

A= 2.800

```
1.49951530  2.84156871  3.96667240  4.99580138  5.99967829
6.99998298  7.99999935  8.99999998  10.00000000  11.00000000
```

A= 1.700

```
0.42882222  1.86798431  2.98201056  3.99873448  4.99994977
5.99999872  6.99999998  8.00000000  9.00000000  10.00000000
```

A= 3.000

```
1.41182448  2.79610601  3.95087871  4.99270269  5.99933172
6.99995913  7.99999820  8.99999994  10.00000000  11.00000000
```

A= 3.500

```
1.17254707  2.65683352  3.89117867  4.97686066  5.99649869
6.99972634  7.99998293  8.99999920  9.99999997  11.00000000
```

A= 10.000

```
1.10315023  2.87777974  4.49226822  5.97662219  7.34970870
8.62419528  9.81030740  10.92044305  11.97353490  12.99316913
```

A= 4.000

```
0.90883294  2.48500666  3.80022318  4.94346072  5.98938485
6.99869271  7.99998818  8.99999392  9.99999965  10.99999990
```

A= 11.000

```
0.49726122  2.34533770  4.03112132  5.58601284  7.02995659
8.37617191  9.63391929  10.81114184  11.91818446  12.97108959
```

A= 4.500

```
0.62543950  2.28579209  3.67857361  4.88648342  5.97162214
6.99524724  7.99945423  8.99995438  9.99999707  10.99999985
```

A= 12.000

```
1.78300502  3.53466580  5.15431594  6.64289499  8.07443570
9.39857254  10.64227744  11.81187429  12.91615304  13.96957199
```

A= 5.000

```
0.32588669  2.06369324  3.52909189  4.80306937  5.93771229
6.98624297  7.99791425  8.99977355  9.99998141  10.99999880
```

A= 13.000

```
1.19515727  3.00821131  4.68789207  6.25601091  7.72736545
9.11223415  10.41784396  11.64956225  12.81252440  13.91431109
```

A= 6.000

```
1.56467980  3.16003687  4.55924719  5.80519296  6.93305605
7.98331330  8.99704253  9.99961529  10.99999650  11.99999692
```

A= 14.000

```
0.58522553  2.45589265  4.19166769  5.81512792  7.34173748
8.78239344  10.14485005  11.43464623  12.65598566  13.81310684
```

A= 7.000

```
1.00903008  2.71861273  4.22795213  5.58150152  6.80685900
7.92917158  8.98059383  9.99611144  10.99941628  11.99993161
```

A= 15.000

```
1.88009747  3.66953266  5.34482163  6.92290700  8.41522390
9.83004539  11.17335283  12.44946072  13.66170539  14.81363285
```

A= 8.000

```
0.41026718  2.22107619  3.82819019  5.27837574  6.59877900
7.80821338  8.92585687  9.97806972  10.99514504  11.99918071
```

A= 16.000

```
1.28518795  3.12461606  4.84874722  6.47513331  8.01567191
9.47908781  10.87180918  12.19852856  13.46264763  14.66684158
```

A= 9.000

```
1.67978942  3.37461773  4.91113298  6.31781278  7.61268823
8.80934400  9.92297825  10.97572277  11.99416031  12.99891308
```

A= 17.000

```
0.67365403  2.55947714  4.32987407  6.00185290  7.58771335
9.09656566  10.53522837  11.90878651  13.22096936  14.47448249
```

A= 18,000

| 0.24522193 | 1.97623967 | 3.78045169 | 5.59586114 | 7.13455370 |
| 8.95820125 | 10.16748381 | 11.58506110 | 12.94181260 | 14.24113063 |

A= 19,000

| 1.37568847 | 3.23312814 | 4.98955769 | 6.65895308 | 8.25104849 |
| 9.77327076 | 11.23134756 | 12.62906569 | 13.97153340 | 15.25936902 |

A= 20,000

| 0.76234012 | 2.65903622 | 4.45485155 | 6.16305063 | 7.79363614 |
| 9.35827394 | 10.85093709 | 12.28827616 | 13.66988095 | 14.99845719 |

A= 21,000

| 0.13449589 | 2.06985728 | 3.90343849 | 5.68877857 | 7.31610202 |
| 8.91330275 | 10.44656235 | 11.92075211 | 13.33969999 | 14.70637031 |

A= 22,000

| 1.46286932 | 3.33675875 | 5.11774190 | 6.82025769 | 8.45239364 |
| 10.02051704 | 11.52968746 | 12.98393294 | 14.38643690 | 15.73966579 |

A= 23,000

| 0.85115386 | 2.75606088 | 4.57134092 | 6.30766167 | 7.97328671 |
| 9.57474630 | 11.11726924 | 12.60504725 | 14.04144938 | 15.42914542 |

A= 24,000

| 0.22377468 | 2.16243568 | 4.01079133 | 5.77966539 | 7.47708345 |
| 9.11092655 | 10.68536138 | 12.20513163 | 13.67375949 | 15.09408094 |

A= 25,000

| 1.55684264 | 3.43715945 | 5.23745006 | 6.96629072 | 8.63049837 |
| 10.23556840 | 11.78597248 | 13.28536526 | 14.73673008 | 16.14248036 |

A= 26,000

| 0.94013105 | 2.85138672 | 4.68205543 | 6.44085069 | 8.13472701 |
| 9.76928452 | 11.30911240 | 12.87798091 | 14.35899511 | 15.79470199 |

A= 27,000

| 0.31305480 | 2.25430927 | 4.11400254 | 5.90218757 | 7.62472391 |
| 9.28773085 | 10.89584594 | 12.45309114 | 13.96252712 | 15.42686405 |

A= 28,000

| 1.64667366 | 3.53531192 | 5.35118866 | 7.10147339 | 8.79198476 |
| 10.42750360 | 12.01199306 | 13.54875636 | 15.04055111 | 16.48967245 |

A= 29,000

| 1.02914977 | 2.94551836 | 4.78866139 | 6.56585242 | 8.28300293 |
| 9.94497976 | 11.55582870 | 13.11893533 | 14.63714737 | 16.11283577 |

A= 30,000

| 0.40234130 | 2.34568292 | 4.21532712 | 6.01864646 | 7.76163982 |
| 9.44925401 | 11.08561056 | 12.67416931 | 14.21784828 | 15.71911238 |

A= 32,000

| 1.11322000 | 3.03877857 | 4.89223935 | 6.68476297 | 8.42144172 |
| 10.10553271 | 11.74362573 | 13.33576759 | 14.88555482 | 16.39520355 |

A= 34,000

| 1.82005672 | 3.72714426 | 5.56664711 | 7.34978873 | 9.08094551 |
| 10.76381927 | 12.40156481 | 13.99688580 | 15.55210765 | 17.06923331 |

A= 36,000

| 0.58091515 | 2.52741737 | 4.41166575 | 6.23900380 | 8.01391568 |
| 9.74020240 | 11.42111243 | 13.05944010 | 14.65760090 | 16.21768947 |

A= 38,000

| 1.29646639 | 3.22308294 | 5.09301957 | 6.90965935 | 8.67729307 |
| 10.39925251 | 12.07841118 | 13.71726140 | 15.31797425 | 16.88284633 |

A= 40,000

| 0.03718690 | 2.00520515 | 3.91516171 | 5.77173160 | 7.57888814 |
| 9.34003880 | 11.05812772 | 12.73571472 | 14.37503661 | 15.97805536 |

A= 42,000

| 0.75949324 | 2.70827295 | 4.60316413 | 6.44821695 | 8.24690850 |
| 10.00224729 | 11.71685366 | 13.39302240 | 15.03277213 | 16.63788467 |

A= 44,000

| 1.47480602 | 3.40656765 | 5.28805024 | 7.12280779 | 8.91389620 |
| 10.66399500 | 12.37545120 | 14.05033365 | 15.69047326 | 17.29749532 |

A= 46,000

| 0.21639454 | 2.18420956 | 4.10080558 | 5.97028566 | 7.79577311 |
| 9.57599448 | 11.32534454 | 13.03393750 | 14.70764804 | 16.34814438 |

A= 48,000

| 0.93317403 | 2.88857286 | 4.79156556 | 6.65022757 | 8.46733313 |
| 10.24332123 | 11.98634765 | 13.69232677 | 15.36496518 | 17.00578916 |

A= 50,000

| 1.55320541 | 3.58860096 | 5.47932059 | 7.32818347 | 9.13766992 |
| 10.96997432 | 12.64704748 | 14.35063091 | 16.02228074 | 17.66341070 |

A= 55,000

| 0.48599244 | 2.45254812 | 4.37647059 | 6.26033399 | 8.10641930 |
| 9.91675813 | 11.69316828 | 13.43728271 | 15.15057350 | 16.83437170 |

A= 60,000

| 1.29524055 | 3.20816206 | 5.16287415 | 7.00087884 | 8.85445957 |
| 10.69571033 | 12.47556311 | 14.22550334 | 15.94709312 | 17.60117818 |

A= 65,000

| 0.12086738 | 2.09935693 | 4.04095743 | 5.94761069 | 7.82106554 |
| 9.66290329 | 11.47455887 | 13.25733854 | 15.01243498 | 16.74093959 |

A= 70,000

| 0.93378796 | 2.89952136 | 4.83157011 | 6.73156119 | 8.60097223 |
| 10.44314972 | 12.25332438 | 14.03862420 | 15.79808558 | 17.53266288 |

A= 75,000

| 1.74170396 | 3.69657714 | 5.62045795 | 7.51472924 | 9.38065591 |
| 11.21939833 | 13.03202368 | 14.81951583 | 16.58278378 | 16.32266901 |

A= 80,000

| 0.57011967 | 2.54562885 | 4.49114323 | 6.40795900 | 8.29726596 |
| 10.16215910 | 11.99764872 | 13.81066905 | 15.60008579 | 17.36670266 |

A= 85,000

| 1.37111372 | 3.34631925 | 5.28368426 | 7.19432833 | 9.07928591 |
| 10.97251419 | 12.77590059 | 14.59926990 | 16.38038971 | 18.14997576 |

A= 90,000

| 0.20445608 | 2.18817052 | 4.14435152 | 6.07455592 | 7.97976204 |
| 9.86027750 | 11.71874608 | 13.55415368 | 15.34783359 | 17.16047113 |

A= 95,000

| 1.01848377 | 2.99156422 | 4.94017256 | 6.84463511 | 8.76441335 |
| 10.64211006 | 12.49787462 | 14.33240781 | 16.14636593 | 17.94036455 |

A= 100,000

1,82818009	3,70302924	5,73413425	7,65234064	9,56880377
11,42303872	13,27691549	15,11066262	16,92487157	18,77600760

A= 105,000

0,85438365	2,63463890	4,59175736	6,52651749	8,43964772
10,33183085	12,20370786	14,05598135	15,88801850	17,70335430

A= 110,000

1,46632678	3,43833709	5,38851295	7,31754921	9,22609831
11,11477384	12,98415364	14,83478256	16,66717502	18,48181722

A= 115,000

0,25918666	2,27509142	4,23966205	6,19356186	8,10741482
10,01180867	11,89729780	13,76440578	15,61362766	17,44543202

A= 120,000

1,10306301	3,09110843	5,03693180	6,97713027	8,89626724
10,79687090	12,67945661	14,54448897	16,39242372	18,22368952

A= 125,000

1,91353301	3,88473397	5,83640085	7,76940604	9,69423376
11,55137716	13,46129530	15,32442380	17,17171670	19,00194747

A= 130,000

0,73570561	2,72159104	4,68626508	6,63231645	8,56054649
10,47102117	12,36538782	14,24285177	16,10422783	17,94989162

A= 135,000

1,55124643	3,52757873	5,48595143	7,42683709	9,35068439
11,25791977	13,14804893	15,02415818	16,88391572	18,72857274

A= 180,000

0,90742695	2,89407159	4,86699231	6,82646653	8,77279047
10,70613176	12,62682597	14,53508107	16,43112595	18,31518120

A= 185,000

1,72067808	3,70218903	5,67044491	7,62570476	9,56821767
11,49822427	13,41595520	15,32143369	17,21547462	19,09768548

A= 190,000

0,54216962	2,53102225	4,50860597	6,47247253	8,42376434
10,36271498	12,28454963	14,20448548	16,10773209	17,99949182

A= 195,000

1,35654860	3,34132787	5,31306407	7,27319301	9,22074207
11,15633052	13,08017003	14,99246494	16,89341245	18,78320392

A= 200,000

0,17639389	2,16695620	4,14904495	6,11688962	8,07271156
10,01672443	11,94913451	13,87014111	15,77993684	17,67870794

A= 225,000

0,26113866	2,25371924	4,23552497	6,20640807	8,16654501
10,11613676	12,05525901	13,98416243	15,90297283	17,81184141

A= 250,000

0,34522347	2,33841293	4,32159557	6,29491958	8,25852893
10,21256352	12,15715936	14,09244870	16,01856018	17,93561896

A= 275,000

0,42963831	2,42305611	4,40736753	6,38269542	8,34915946
10,30687627	12,25595946	14,19651980	16,12866528	18,05250123

A= 140,000

0,37348312	2,36112496	4,35114716	6,28400447	8,22012916
10,13993256	12,04380640	13,93212412	15,80524190	17,66350017

A= 145,000

1,18758579	3,16864066	5,13284131	7,08060446	9,01232704
10,92838747	12,82914687	14,71495010	16,58612674	18,44299204

A= 150,000

0,00756453	1,99908424	3,97404954	5,93286242	7,87590604
9,80354616	11,71613214	13,61399788	15,49706284	17,36683281

A= 155,000

0,82305754	2,80625322	4,77757193	6,73138384	8,67004260
10,59388629	12,50323837	14,39840854	16,27969354	18,14737785

A= 160,000

1,63600906	3,61533006	5,57939826	7,52855575	9,46312986
11,38343402	13,28976859	15,18242160	17,06166938	18,92777730

A= 165,000

0,45791551	2,44667157	4,42052079	6,37969422	8,32450890
10,25526868	12,17226496	14,07577737	15,96607443	17,84341418

A= 170,000

1,27207694	3,25526509	5,22400520	7,17860449	9,11935762
11,04654737	12,96044535	14,86131254	16,74939989	18,62404880

A= 175,000

0,09197917	2,08409024	4,06198221	6,02594087	7,97625608
9,91320237	11,83704361	13,74803354	15,64641630	17,53242693

A= 300,000

0,51405317	2,50766138	4,49291496	6,46991743	8,43876985
10,30957689	12,35241689	14,20740198	16,23461809	18,16415507

A= 325,000

0,59846804	2,59223746	4,57828934	6,55671210	8,52759222
10,49101425	12,44706095	14,39581325	16,33735038	18,27174990

A= 350,000

0,68298293	2,67679058	4,66352752	6,64317012	8,61579322
10,59147011	12,54027260	14,49227107	16,43753048	18,37613048

A= 375,000

0,76729783	2,76132533	4,74865657	6,72935821	8,70349562
10,67113295	12,63233310	14,58715782	16,53566768	18,47792216

A= 400,000

0,85171273	2,84584519	4,83369685	6,81532655	8,79079183
10,76014931	12,72385455	14,68076215	16,63212576	18,57759807

A= 425,000

0,93591764	2,93035265	4,91866395	6,90111360	8,87775274
10,84333173	12,81379997	14,77330609	16,72719794	18,67552253

A= 450,000

1,02054256	3,01486989	5,00356999	6,98674936	8,96443371
10,93566807	12,90349670	14,86496320	16,82111048	18,77193078

A= 475,000

1,10495748	3,09933849	5,08842458	7,07225754	9,05087847
11,02432788	12,99264567	14,95587112	16,91404294	18,86719926

		A= 500,000					A= 900,000		
1.18937241	3.18381973	5.17323541	7.15765714	9.13712213	0.54218932	2.54001148	4.53501940	6.52722491	8.51063976
11.11156701	13.08132789	15.04014038	17.00613958	18.96136010	10.50327558	12.48714392	14.46825625	16.44662391	18.42225820

		A= 550,000					A= 950,000		
1.35820227	3.35276418	5.30274952	7.32818940	9.30911493	0.71113057	2.70684138	4.70388622	6.69627570	8.68602037
11.28555625	13.25754345	15.22510617	17.18627365	19.14707476	10.67313069	12.65761704	14.63948972	16.61875895	18.50543487

		A= 600,000					A=1000,000		
1.52703214	3.52168958	5.51215001	7.49803973	9.48058468	0.88006068	2.87767129	4.87274935	6.86530445	8.85534610
11.45861051	13.43254257	15.40240588	17.36872519	19.33002495	10.84288377	12.82792681	14.81048455	16.79056624	18.76818103

		A= 650,000					A=1500,000		
1.69586202	3.69060030	5.68146303	7.66847261	9.65165121	0.57032548	2.56899399	4.56597040	6.56125897	8.55486397
11.63102076	13.60660292	15.57841913	17.54649060	19.51083829	10.50678966	12.53704024	14.52561992	16.51253289	18.49778330

		A= 700,000					A=2000,000		
1.86049190	3.85949950	5.65070725	7.83833448	9.82240036	0.26048025	2.25968238	4.25761001	6.25426956	8.24966348
11.80292383	13.77992364	15.75341835	17.72342634	19.68996578	10.24379005	12.23666377	14.22827499	16.21863008	18.20773141

		A= 750,000					A=3000,000		
0.03527630	2.03352179	4.02838947	6.01989639	8.00805940	1.64042390	3.63930413	5.63733750	7.63452509	9.63086795
9.99289521	11.97442037	13.95265126	15.92760811	17.89929499	11.62636717	13.62102380	15.61483892	17.60781358	19.59994885

		A= 800,000					A=4000,000		
0.20926498	2.20235168	4.19727195	6.18904075	8.17747292	1.02084749	3.02020455	5.01892590	7.01701215	9.01446391
10.16318316	12.14558608	14.12489601	16.10112736	18.07429427	11.01128178	13.00746637	15.00301827	16.99793808	18.99222641

		A= 850,000					A=5000,000		
0.37323494	2.37118158	4.36614825	6.35814821	8.34719462	0.40114383	2.40078710	4.39992163	6.39854767	8.39666565
10.33330052	12.31687883	14.29674238	16.27410386	18.24857589	10.39427597	12.39137901	14.38797516	16.38406480	18.37964831

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