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ON THE Λ AND Φ OPERATORS
OF RADIATIVE TRANSFER THEORY

by S. S. KUMAR

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Cambridge, Mass.

On the Λ and Φ Operators of Radiative Transfer Theory

By S. S. Kumar [1]

Introduction

For some time I have been working on an analytical method for computing fluxes in model stellar atmospheres (Kumar, 1961). The method will be discussed in greater detail in another paper, but since it makes use of the Λ and Φ operators an outline is given here.

We approximate the monochromatic source function S_ν at any depth τ_ν by an expression of the type

$$S_\nu(\tau_\nu) = \sum_0^M a_m \tau_\nu^m + \sum_2^N b_n E_n(\tau_\nu) + \sum_0^P c_p e^{-d_p \tau_\nu}, \quad (1)$$

where a_m, b_n, c_p, d_p are unknown parameters and $E_n(\tau_\nu)$ is the n-th exponential integral function defined by

$$E_n(x) = \int_1^\infty \frac{e^{-xu}}{u^n}\, du. \quad (2)$$

The monochromatic source function satisfies the following integral equation:

$$S_\nu = \frac{\kappa_\nu}{\kappa_\nu + \sigma_s} B_\nu + \frac{\sigma_s}{\kappa_\nu + \sigma_s} \Lambda[S_\nu], \quad (3)$$

where σ_s is the coefficient of electron scattering, κ_ν the coefficient of continuous absorption, and B_ν the Planckian function. The operator Λ is defined by

$$\Lambda_x\{f(t)\} = \frac{1}{2} \int_0^\infty f(t)\, E_1(|t-x|)\, dt \equiv \Lambda[f(x)]. \quad (4)$$

If we put the assumed solution (1) for the source function in equation (3), we get

[1] Smithsonian Astrophysical Observatory.

$$\sum_0^M \left[\left\{ \tau_\nu^m - \frac{\sigma_s}{\kappa_\nu + \sigma_s} \Lambda(\tau_\nu^m) \right\} a_m \right]$$
$$+ \sum_2^N \left[\left\{ E_n - \frac{\sigma_s}{\kappa_\nu + \sigma_s} \Lambda(E_n) \right\} b_n \right] + \sum_0^P \left[\left\{ e^{-d_p \tau_\nu} \right.\right.$$
$$\left.\left. - \frac{\sigma_s}{\kappa_\nu + \sigma_s} \Lambda(e^{-d_p \tau_\nu}) \right\} c_p \right] = \frac{\kappa_\nu}{\kappa_\nu + \sigma_s} B_\nu.$$
$$(5)$$

The parameters a_m, b_n, c_p, d_p are obtained by solving a set of transcendental equations obtained from equation (5).

The monochromatic flux at any depth and for any frequency is given in terms of these parameters by the following expression:

$$F_\nu(\tau_\nu) = \sum_0^M a_m \Phi(\tau_\nu^m) + \sum_2^N b_n \Phi(E_n)$$
$$+ \sum_0^P c_p \Phi(e^{-d_p \tau_\nu}),$$
$$(6)$$

where the operator Φ is defined by:

$$\Phi_x\{f(t)\} = 2 \int_x^\infty f(t) E_2(t-x)\, dt$$
$$- 2 \int_0^\infty f(t) E_2(x-t)\, dt \equiv \Phi[f(x)]. \quad (7)$$

In order to use this method we must know the Λ and Φ operators of the functions τ^m, E_n, $e^{-d_\nu \tau}$. The operators of the function E_n have been computed by Kourganoff (1952), but since no tables are available for the operators of the other two functions, the object of this paper is to present them (tables 1–4).

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The Λ and Φ operators are also very useful in obtaining the temperature distribution for nongray model atmospheres (Swihart, 1956; Böhm, 1954), not at present known exactly.

We start, therefore, with a temperature distribution that corresponds approximately to the nongray model, and we employ a procedure for correction. To show the importance of the Φ operators, we present here a generalization of Swihart's method. The initial approximate temperature distribution is represented by

$$T^4 = \frac{3}{4} T_e^4 [a_0 + a_1\tau + a_2\tau^2 + \ldots$$
$$+ b_2 E_2 + b_3 E_3 + \ldots + c_0 e^{-d\tau} + \ldots]. \quad (8)$$

To obtain the temperature distribution for the nongray model we use the Φ operator and get the following expression for the correction ΔT:

$$\Delta(T^4) = \frac{3}{4} T_e^4 [\Delta a_0 + (\Delta a_1)\tau + \ldots (\Delta b_2)E_2$$
$$+ (\Delta b_3)E_3 + \ldots \Delta c_0 e^{-d\tau} + \ldots], \quad (9)$$

where Δa_0, Δa_1, ... are obtained by solving the following set of algebraic equations:

$$\Delta F'(\tau) = \frac{3\sigma}{4\pi} T_e^4 [(\Delta a_0)\Phi(1) + \Delta a_1)\Phi(\tau)$$
$$+ \ldots (\Delta b_2)\Phi(E_2) + (\Delta b_3)\Phi(E_3) + \ldots$$
$$+ (\Delta c_0)\Phi(e^{-d\tau}) + \ldots], \quad (10)$$

where $\Delta F'$ is the known difference between the desired flux and the flux corresponding to the gray model. Since the Φ operator is probably insufficient to give the correct temperature distribution, we must also use the Λ operator.

The formulas used in the computations

The following formulas, given by Kourganoff (1952), were used to prepare tables 1 and 2 for the Φ and Λ operators of $e^{-d\tau}$:

$$\Phi(e^{-d\tau}) = \frac{2e^{-d\tau}}{d^2} \left[2a + \log \frac{d+1}{|d-1|} + E_1(\tau - \tau d) \right]$$
$$- \frac{2}{d^2} [dE_2(\tau) + E_1(\tau)] \quad (11)$$

$$\Lambda(e^{-d\tau}) = \frac{e^{-d\tau}}{2d} \left[\log \frac{d+1}{|d-1|} - E_1(\tau - \tau d) \right] - \frac{1}{2d} E_1(\tau) \quad (12)$$

The functions $E_1(\tau)$ and $E_1(\tau - \tau d)$ are given by

$$E_1(\tau) = -0.5772156 - \log |\tau| + \sum_{i=1}^{\infty} (-1)^i \frac{\tau^i}{i \cdot i!}, \quad (13)$$

and $E_2(\tau)$ is given by

$$E_2(\tau) = e^{-\tau} - \tau E_1(\tau). \quad (14)$$

For the special case of $d = 1$, the following formulas were used for the Φ and Λ operators:[2]

$$\Phi(e^{-\tau}) = 2e^{-\tau}\{1.422785 - \log_e 2\tau\}$$
$$- 2[E_2(\tau) + E_1(\tau)]; \quad (15)$$

$$\Lambda(e^{-\tau}) = \frac{1}{2} e^{-\tau} [\log_e 2\tau + 0.577215] + \frac{1}{2} E_1(\tau). \quad (16)$$

For computing the function $E_1(x)$, where x stands for either τ or $(\tau - d\tau)$, subroutine NUEXPI,[3] distributed by SHARE, was used.

The procedure for computing $E_1(x)$ follows. Actually, the subroutine computes the function $Ei(x)$, which is defined by

$$E_1(x) = -Ei(-x).$$

For a different range of values of x, the following formulas were used to obtain $Ei(x)$:

i) $x \leq -1$

For this range the subroutine uses the following formula given by Hastings (1955):

$$Ei(x) = \frac{1}{xe^{-x}} \left(\frac{a_0 + a_1x + a_2x^2 + a_3x^3 + x^4}{b_0 + b_1x + b_2x^2 + b_3x^3 + x^4} \right) \quad (17)$$

where a's and b's have been tabulated by Hastings.

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[2] The operators were computed on an IBM-7090 at the Smithsonian Astrophysical Observatory.

[3] Written by James W. Cooley at the AEC Computing and Applied Mathematics Center of the New York Institute of Mathematical Sciences and slightly changed by Owen Gingerich at the Smithsonian Astrophysical Observatory to permit its use with the main program for computing the Λ and Φ operators.

ii)　　　　　$-1 < x < 5$

For this range,

$$Ei(x) = \log |x| - \sum_{n=0}^{16} c_n x^n \qquad (18)$$

The quantities c_n's have been computed by Cooley.

iii)　　　　　$5 \le x < 24.5$

For this range the following expansion is used in the subroutine:

$$Ei(x) = e^x [U_0 + U_1 + U_2 + \ldots], \qquad (19)$$

where

$$U_n = \frac{x_0 - x}{n} \left[U_{n-1} - \frac{1}{x_0} \left(\frac{x_0 - x}{x} \right)^{n-1} \right]. \qquad (19a)$$

For each value of n, x_0 is a known quantity.

iv)　　　　　$24.5 < x.$

The subroutine uses the following formula:

$$Ei(x) = \frac{1}{e^{-x}} \left[\frac{-50 + 58x - 15x^2 + x^3}{24 - 96x + 72x^2 - 16x^3 + x^4} \right]. \qquad (20)$$

The accuracy of the Λ and Φ operators is dependent upon that of the function $E_1(x)$. The subroutine gives $E_1(x)$ correct up to seven

TABLE 1.—*Values of* $\Phi_0(e^{-dr})$ *and* $\Lambda_0(e^{-dr})$

d	$\Phi_0(e^{-dr})$	$\Lambda_0(e^{-dr})$
0.01	1.01060	0.497474
0.05	0.968400	0.487895
0.10	0.937820	0.476554
0.20	0.883950	0.455802
0.40	0.794100	0.420590
0.60	0.722203	0.391671
0.80	0.663162	0.367368
1.00	0.613706	0.346574
2.00	0.450695	0.274652
3.00	0.358602	0.231047
4.00	0.298820	0.201180
5.00	0.256658	0.179176
6.00	0.225228	0.162159
7.00	0.200838	0.148531
8.00	0.181337	0.137326
9.00	0.165367	0.127921
10.00	0.152042	0.119895
15.00	0.108688	0.0924198
20.00	0.0847774	0.0761130
25.00	0.0695741	0.0651620
30.00	0.0590355	0.0572329

digits. The operators in table 2 are computed and correct up to six digits.

Since $E_1(\tau - d\tau)$ was computed for a large range of the argument, varying from -87.00 to $+9.4$, we have also tabulated $E_1(\tau - d\tau)$ along with the Λ and Φ operators. For very small values of d and τ table 2 gives the rounded-off values for $(\tau - d\tau)$. For some values of d, we have plotted the Λ and Φ operators of the function $(e^{-d\tau})$. Figures 1, 2, 3, 4, 5, 6 show the operators for $d=0.1$, 0.4, 1.0, 5.0, 10.0, 30.0.

For $\tau = 0$ and for any value of d the following simple expressions were used

$$\Phi_0(e^{-dt}) = \frac{2}{d^2}[d - \log (d+1)], \qquad (21)$$

$$\Lambda_0(e^{-dt}) = \frac{1}{2d} \log (d+1). \qquad (21a)$$

Table 1 gives the values of $\Phi_0(e^{-dt})$ and $\Lambda_0(e^{-dt})$ for several values of d.

For the function τ^m the following formulas were used:

$$\Phi(\tau^m) = 2m! \left(\sum_{k=0}^{m} \frac{\tau^k}{k!} \delta_{m+2-k} \right) + (-1)^m E_{m+3}(\tau), \qquad (22)$$

where

$$\delta_\beta = \begin{cases} 0 & \text{if } \beta = m+2-k \text{ is even,} \\ 2/\beta & \text{if } \beta \qquad\qquad \text{is odd.} \end{cases} \qquad (23)$$

$$\Lambda(\tau^m) = 2! \left[\left(\sum_{k=0}^{m} \frac{\tau^k}{k!} \delta_{m+1-k} \right) + (-1)^{m+1} E_{m+2}(\tau) \right], \qquad (24)$$

where

$$\delta_\alpha = \begin{cases} 0 & \text{if } \alpha = m+1-k \text{ is even,} \\ 2/\alpha & \text{if } \alpha \qquad\qquad \text{is odd.} \end{cases} \qquad (25)$$

Tables 3 and 4 were computed for six values of $m=0$, 1, 2, 3, 4, 5. For these computations we needed the exponential integrals E_2, E_3, E_4, E_5, E_6, E_7, and E_8, and used the tables published by Placzek (1947).
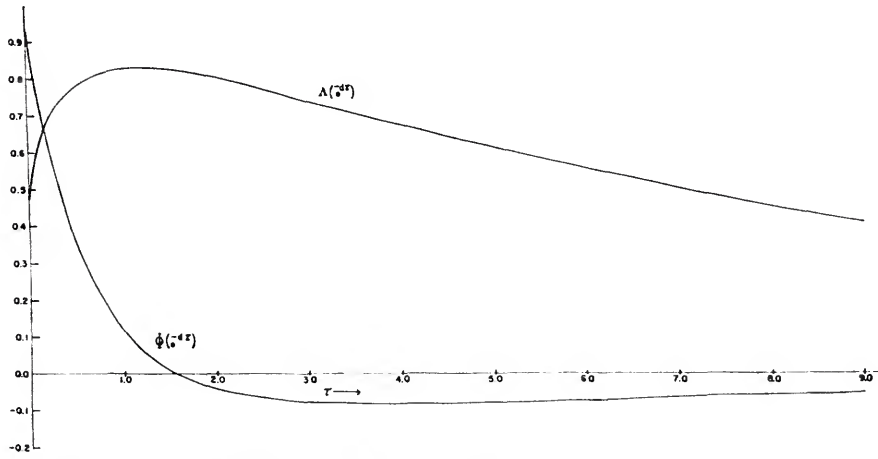
FIGURE 1.—The Λ and Φ operators of ϵ^{-dr}, with $d=0.1$.
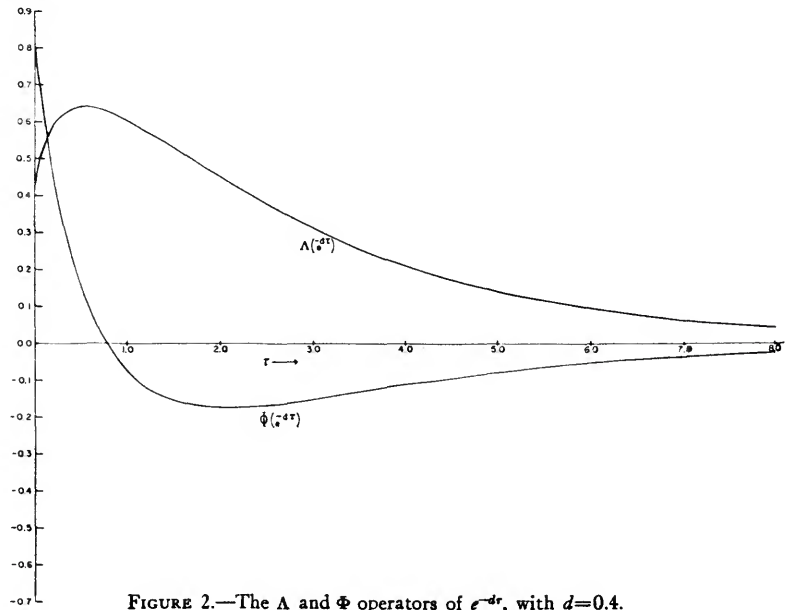
FIGURE 2.—The Λ and Φ operators of ϵ^{-dr}, with $d=0.4$.
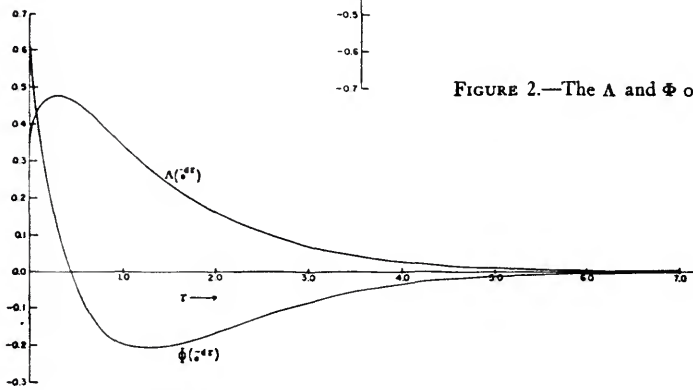
FIGURE 3.—The Λ and Φ operators of ϵ^{-dr}, with $d=1.0$.
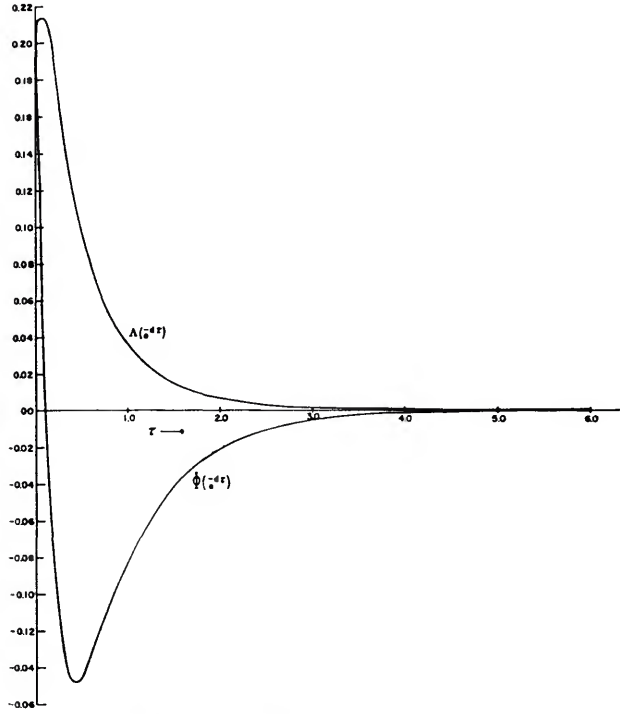
FIGURE 4.—The Λ and Φ operators of $e^{-d\tau}$, with $d=5.0$.
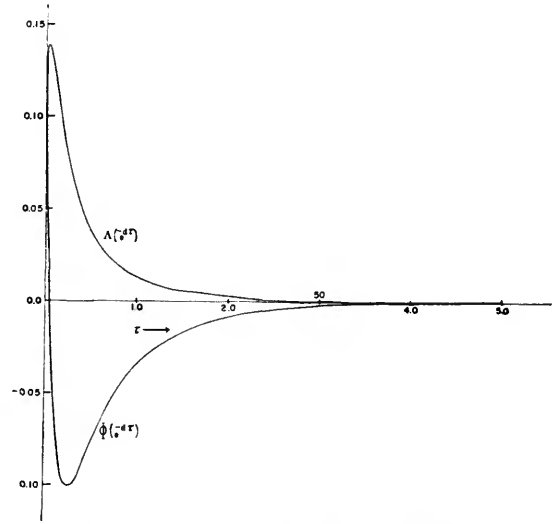
FIGURE 5.—The Λ and Φ operators of $e^{-d\tau}$, with $d=10.0$.
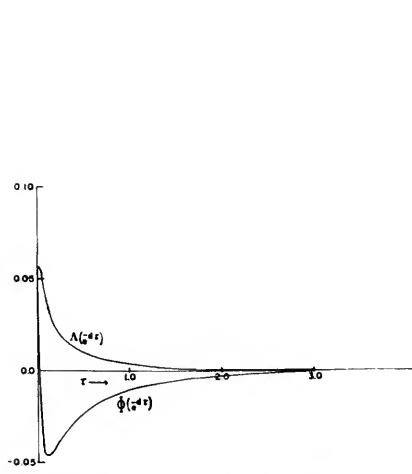
FIGURE 6.—The Λ and Φ operators of $e^{-d\tau}$, with $d=30.0$.
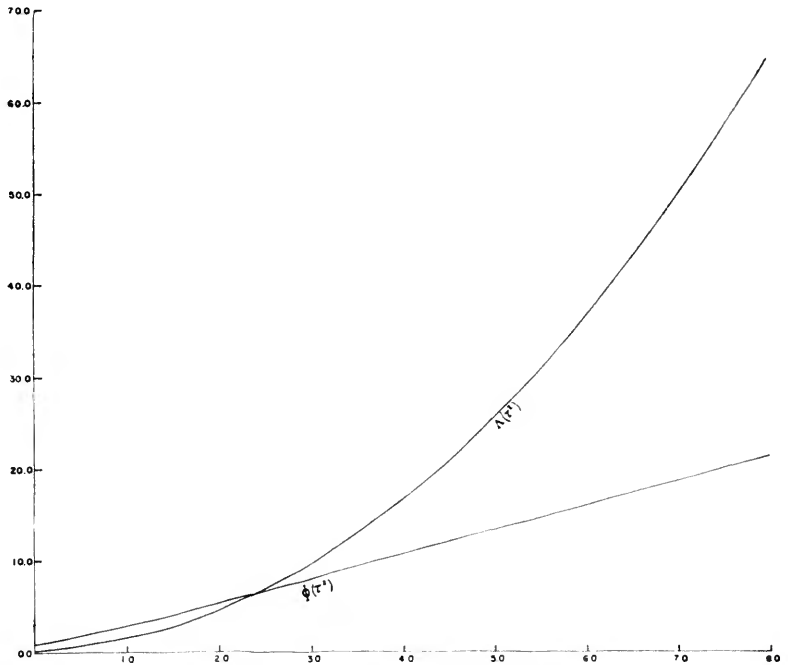
FIGURE 7.—The Λ and Φ operators of τ^2.
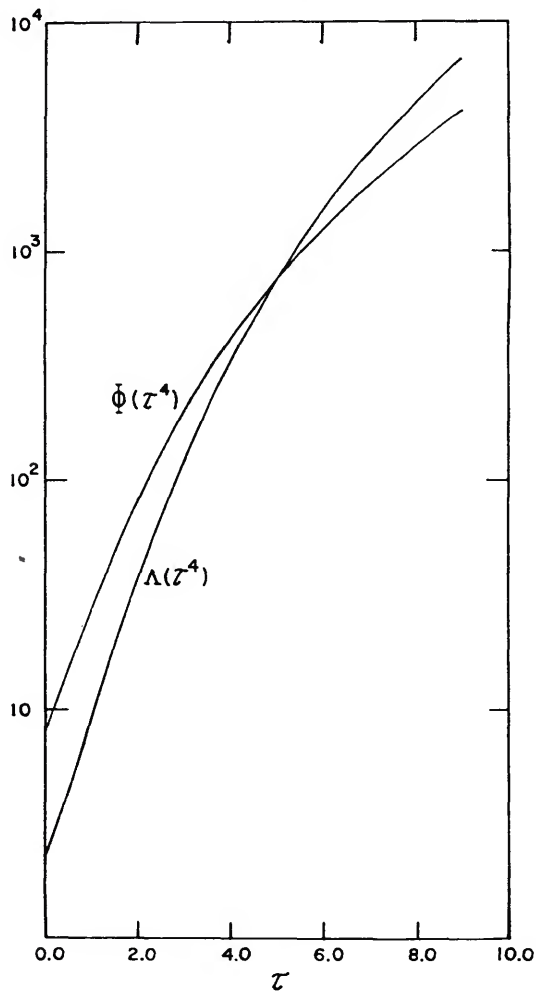
FIGURE 8.—The Λ and Φ operators of τ^4.

The Λ and Φ operators of τ^m are correct to six decimal places. Figure 7 shows the operators of the function τ^2. Figure 8 gives the operators of the function τ^4.

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Abstract

The importance of Λ and Φ operators for the problem of transfer of radiation in nongray stellar atmospheres is discussed, and extensive tables of these operators of the functions $e^{-d\tau}$ and τ^m are given.

TABLE 2.—*The Λ and Φ operators of the exponential function*

τ	d	$\tau-d\tau$	$E_1(\tau-d\tau)$	$\Lambda(e^{-d\tau})$	$\Phi(e^{-d\tau})$
0.001	0.010	0.001	0.634158E 01	0.501175E 00	0.991211E 00
0.005	0.010	0.005	0.473610E 01	0.511803E 00	0.983398E 00
0.010	0.010	0.010	0.404788E 01	0.522633E 00	0.973633E 00
0.050	0.010	0.049	0.247746E 01	0.583327E 00	0.902344E 00
0.100	0.010	0.099	0.183202E 01	0.635665E 00	0.825195E 00
0.200	0.010	0.198	0.123089E 01	0.709162E 00	0.695557E 00
0.300	0.010	0.297	0.913133E 00	0.760968E 00	0.591553E 00
0.400	0.010	0.396	0.709131E 00	0.800062E 00	0.505127E 00
0.500	0.010	0.495	0.565885E 00	0.830608E 00	0.433350E-00
0.600	0.010	0.594	0.459912E-00	0.854994E 00	0.373047E-00
0.700	0.010	0.693	0.378777E-00	0.874747E 00	0.321533E-00
0.800	0.010	0.792	0.315131E-00	0.890912E 00	0.277649E-00
0.900	0.010	0.891	0.264289E-00	0.904238E 00	0.240234E-00
1.000	0.010	0.990	0.223100E-00	0.915283E 00	0.207886E-00
1.100	0.010	1.089	0.189355E-00	0.924470E 00	0.180145E-00
1.200	0.010	1.188	0.161454E-00	0.932130E 00	0.156036E-00
1.300	0.010	1.287	0.138208E-00	0.938524E 00	0.135162E-00
1.400	0.010	1.386	0.118715E-00	0.943860E 00	0.117065E-00
1.500	0.010	1.485	0.102279E-00	0.948309E 00	0.101303E-00
2.000	0.010	1.980	0.502744E-01	0.961313E 00	0.476608E-01
2.500	0.010	2.475	0.257503E-01	0.965362E 00	0.198021E-01
3.000	0.010	2.970	0.135564E-01	0.965112E 00	0.500107E-02
3.500	0.010	3.465	0.727902E-02	0.962712E 00	-0.297737E-02
4.000	0.010	3.960	0.396717E-02	0.959209E 00	-0.732327E-02
4.500	0.010	4.455	0.218760E-02	0.955133E 00	-0.969696E-02
5.000	0.010	4.950	0.121774E-02	0.950759E 00	-0.109971E-01
5.500	0.010	5.445	0.683152E-03	0.946234E 00	-0.116990E-01
6.000	0.010	5.940	0.385759E-03	0.941636E 00	-0.120682E-01
6.500	0.010	6.435	0.219043E-03	0.937008E 00	-0.122508E-01
7.000	0.010	6.930	0.124975E-03	0.932373E 00	-0.123282E-01
7.500	0.010	7.425	0.716037E-04	0.927745E 00	-0.123459E-01
8.000	0.010	7.920	0.411759E-04	0.923130E 00	-0.123298E-01
8.500	0.010	8.415	0.237556E-04	0.918533E 00	-0.122945E-01
9.000	0.010	8.910	0.137453E-04	0.913956E 00	-0.122483E-01
9.500	0.010	9.405	0.797402E-05	0.909400E 00	-0.121960E-01

TABLE 2.—*The Λ and Φ operators of the exponential function* (continued)

τ	d	$\tau - d\tau$	$E_1(\tau - d\tau)$	$\Lambda(e^{-d\tau})$	$\Phi(e^{-d\tau})$
0.001	0.050	0.001	0.638278E 01	0.491543E-00	0.965759E 00
0.005	0.050	0.005	0.477714E 01	0.502087E 00	0.957794E 00
0.010	0.050	0.009	0.408873E 01	0.512816E 00	0.947906E 00
0.050	0.050	0.047	0.251675E 01	0.572643E 00	0.875443E 00
0.100	0.050	0.095	0.186945E 01	0.623790E 00	0.796051E 00
0.200	0.050	0.190	0.126486E 01	0.694653E 00	0.663750E 00
0.300	0.050	0.285	0.943965E 00	0.743593E 00	0.556892E 00
0.400	0.050	0.380	0.737112E 00	0.779655E 00	0.468811E-00
0.500	0.050	0.475	0.591280E 00	0.807047E 00	0.395298E-00
0.600	0.050	0.570	0.482960E-00	0.828187E 00	0.333370E-00
0.700	0.050	0.665	0.399695E-00	0.844621E 00	0.280857E-00
0.800	0.050	0.760	0.334115E-00	0.857413E 00	0.236092E-00
0.900	0.050	0.855	0.281519E-00	0.867324E 00	0.197763E-00
1.000	0.050	0.950	0.238738E-00	0.874921E 00	0.164850E-00
1.100	0.050	1.045	0.203547E-00	0.880639E 00	0.136471E-00
1.200	0.050	1.140	0.174335E-00	0.884813E 00	0.111959E-00
1.300	0.050	1.235	0.149898E-00	0.887711E 00	0.907354E-01
1.400	0.050	1.330	0.129325E-00	0.889545E 00	0.723267E-01
1.500	0.050	1.425	0.111909E-00	0.890489E 00	0.563364E-01
2.000	0.050	1.900	0.562044E-01	0.886040E 00	0.246143E-02
2.500	0.050	2.375	0.294022E-01	0.872909E 00	-0.248973E-01
3.000	0.050	2.850	0.158054E-01	0.855872E 00	-0.388108E-01
3.500	0.050	3.325	0.866412E-02	0.837128E 00	-0.457149E-01
4.000	0.050	3.800	0.482025E-02	0.817743E 00	-0.488949E-01
4.500	0.050	4.275	0.271303E-02	0.798253E 00	-0.500728E-01
5.000	0.050	4.750	0.154136E-02	0.778930E 00	-0.501674E-01
5.500	0.050	5.225	0.882491E-03	0.759912E 00	-0.496766E-01
6.000	0.050	5.700	0.508547E-03	0.741270E 00	-0.488726E-01
6.500	0.050	6.175	0.294680E-03	0.723036E 00	-0.479058E-01
7.000	0.050	6.650	0.171569E-03	0.705222E 00	-0.468599E-01
7.500	0.050	7.125	0.100307E-03	0.687832E 00	-0.457812E-01
8.000	0.050	7.600	0.588588E-04	0.670862E 00	-0.446958E-01
8.500	0.050	8.075	0.346496E-04	0.654305E 00	-0.436182E-01
9.000	0.050	8.550	0.204571E-04	0.638154E 00	-0.425562E-01
9.500	0.050	9.025	0.121093E-04	0.622401E 00	-0.415141E-01

TABLE 2.—*The* Λ *and* Φ *operators of the exponential function* (continued)

τ	d	$\tau-d\tau$	$E_1(\tau-d\tau)$	$\Lambda(e^{-d\tau})$	$\Phi(e^{-d\tau})$
0.001	0.100	0.001	0.643680E 01	0.480168E-00	0.935883E 00
0.005	0.100	0.004	0.483096E 01	0.490618E-00	0.927650E 00
0.010	0.100	0.009	0.414229E 01	0.501225E 00	0.917603E 00
0.050	0.100	0.045	0.256838E 01	0.560011E 00	0.843365E 00
0.100	0.100	0.090	0.191874E 01	0.609725E 00	0.762093E 00
0.200	0.100	0.180	0.130980E 01	0.677436E 00	0.626484E 00
0.300	0.100	0.270	0.984933E 00	0.722963E 00	0.516979E 00
0.400	0.100	0.360	0.774462E 00	0.755436E 00	0.426765E-00
0.500	0.100	0.450	0.625331E 00	0.779119E 00	0.351521E-00
0.600	0.100	0.540	0.514004E 00	0.796467E 00	0.288218E-00
0.700	0.100	0.630	0.427997E-00	0.809054E 00	0.234637E-00
0.800	0.100	0.720	0.359918E-00	0.817964E 00	0.189049E-00
0.900	0.100	0.810	0.305043E-00	0.823976E 00	0.150113E-00
1.000	0.100	0.900	0.260184E-00	0.827671E 00	0.116764E-00
1.100	0.100	0.990	0.223100E-00	0.829491E 00	0.881205E-01
1.200	0.100	1.080	0.192160E-00	0.829782E 00	0.634723E-01
1.300	0.100	1.170	0.166150E-00	0.828817E 00	0.422299E-01
1.400	0.100	1.260	0.144142E-00	0.826816E 00	0.239000E-01
1.500	0.100	1.350	0.125417E-00	0.823956E 00	0.807023E-02
2.000	0.100	1.300	0.647131E-01	0.801066E 00	-0.440844E-01
2.500	0.100	2.250	0.347621E-01	0.770623E 00	-0.688586E-01
3.000	0.100	2.700	0.191819E-01	0.737493E 00	-0.798308E-01
3.500	0.100	3.150	0.107913E-01	0.703879E 00	-0.836924E-01
4.000	0.100	3.600	0.616041E-02	0.670817E 00	-0.838608E-01
4.500	0.100	4.050	0.355741E-02	0.638792E 00	-0.821236E-01
5.000	0.100	4.500	0.207340E-02	0.608018E 00	-0.794313E-01
5.500	0.100	4.950	0.121774E-02	0.578576E 00	-0.762951E-01
6.000	0.100	5.400	0.719804E-03	0.550477E 00	-0.729909E-01
6.500	0.100	5.850	0.427812E-03	0.523697E 00	-0.696678E-01
7.000	0.100	6.300	0.255471E-03	0.498194E-00	-0.664050E-01
7.500	0.100	6.750	0.153187E-03	0.473918E-00	-0.632437E-01
8.000	0.100	7.200	0.921881E-04	0.450817E-00	-0.602036E-01
8.500	0.100	7.650	0.556577E-04	0.428837E-00	-0.572930E-01
9.000	0.100	8.100	0.336995E-04	0.407927E-00	-0.545135E-01
9.500	0.100	8.550	0.204571E-04	0.388034E-00	-0.518634E-01

TABLE 2.—*The Λ and Φ operators of the exponential function* (continued)

τ	d	$\tau - d\tau$	$E_1(\tau - d\tau)$	$\Lambda(e^{-d\tau})$	$\Phi(e^{-d\tau})$
0.001	0.200	0.001	0.655448E 01	0.459378E-00	0.881756E 00
0.005	0.200	0.004	0.494824E 01	0.469649E-00	0.873201E 00
0.010	0.200	0.008	0.425908E 01	0.480030E-00	0.862730E 00
0.050	0.200	0.040	0.268126E 01	0.536861E 00	0.785427E 00
0.100	0.200	0.080	0.202694E 01	0.583889E 00	0.700750E 00
0.200	0.200	0.160	0.140919E 01	0.645714E 00	0.559511E 00
0.300	0.200	0.240	0.107624E 01	0.684922E 00	0.445692E-00
0.400	0.200	0.320	0.858335E 00	0.710821E 00	0.352230E-00
0.500	0.200	0.400	0.702380E 00	0.727784E 00	0.274622E-00
0.600	0.200	0.480	0.584784E 00	0.738344E 00	0.209691E-00
0.700	0.200	0.560	0.493020E-00	0.744131E 00	0.155079E-00
0.800	0.200	0.640	0.419652E-00	0.746269E 00	0.108976E-00
0.900	0.200	0.720	0.359918E-00	0.745570E 00	0.699561E-01
1.000	0.200	0.800	0.310597E-00	0.742639E 00	0.368747E-01
1.100	0.200	0.880	0.269413E-00	0.737938E 00	0.880396E-02
1.200	0.200	0.960	0.234708E-00	0.731827E 00	-0.150200E-01
1.300	0.200	1.040	0.205238E-00	0.724590E 00	-0.352288E-01
1.400	0.200	1.120	0.180052E-00	0.716456E 00	-0.523499E-01
1.500	0.200	1.200	0.158408E-00	0.707609E 00	-0.668260E-01
2.000	0.200	1.600	0.863083E-01	0.657094E 00	-0.110826E-00
2.500	0.200	2.000	0.489005E-01	0.602956E 00	-0.126477E-00
3.000	0.200	2.400	0.284403E-01	0.549910E 00	-0.128386E-00
3.500	0.200	2.800	0.168553E-01	0.499870E-00	-0.123716E-00
4.000	0.200	3.200	0.101330E-01	0.453534E-00	-0.116079E-00
4.500	0.200	3.600	0.616041E-02	0.411046E-00	-0.107322E-00
5.000	0.200	4.000	0.377935E-02	0.372301E-00	-0.983870E-01
5.500	0.200	4.400	0.233601E-02	0.337077E-00	-0.897422E-01
6.000	0.200	4.800	0.145299E-02	0.305115E-00	-0.816078E-01
6.500	0.200	5.200	0.908622E-03	0.276145E-00	-0.740721E-01
7.000	0.200	5.600	0.570840E-03	0.249903E-00	-0.671546E-01
7.500	0.200	6.000	0.360082E-03	0.226142E-00	-0.608392E-01
8.000	0.200	6.400	0.227948E-03	0.204634E-00	-0.550927E-01
8.500	0.200	6.800	0.144758E-03	0.185167E-00	-0.498748E-01
9.000	0.200	7.200	0.921881E-04	0.167550E-00	-0.451430E-01
9.500	0.200	7.600	0.588588E-04	0.151608E-00	-0.408554E-01

TABLE 2.—*The Λ and Φ operators of the exponential function* (continued)

τ	d	$\tau-d\tau$	$E_1(\tau-d\tau)$	$\Lambda(e^{-d\tau})$	$\Phi(e^{-d\tau})$
0.001	0.300	0.001	0.668791E 01	0.440807E-00	0.834108E 00
0.005	0.300	0.003	0.508127E 01	0.450915E-00	0.825262E 00
0.010	0.300	0.007	0.439162E 01	0.461087E-00	0.814429E 00
0.050	0.300	0.035	0.280989E 01	0.516112E 00	0.734429E 00
0.100	0.300	0.070	0.215084E 01	0.560661E 00	0.646829E 00
0.200	0.300	0.140	0.152415E 01	0.617089E 00	0.501005E 00
0.300	0.300	0.210	0.118290E 01	0.650575E 00	0.383985E-00
0.400	0.300	0.280	0.957308E 00	0.670604E 00	0.288434E-00
0.500	0.300	0.350	0.794215E 00	0.681663E 00	0.209636E-00
0.600	0.300	0.420	0.669997E 00	0.686359E 00	0.144251E-00
0.700	0.300	0.490	0.572089E 00	0.686377E 00	0.897859E-01
0.800	0.300	0.560	0.493020E-00	0.682878E 00	0.443194E-01
0.900	0.300	0.630	0.427997E-00	0.676702E 00	0.633478E-02
1.000	0.300	0.700	0.373769E-00	0.668474E 00	-0.253869E-01
1.100	0.300	0.770	0.328032E-00	0.658671E 00	-0.518381E-01
1.200	0.300	0.840	0.289103E-00	0.647662E 00	-0.738354E-01
1.300	0.300	0.910	0.255714E-00	0.635738E 00	-0.920550E-01
1.400	0.300	0.980	0.226891E-00	0.623132E 00	-0.107062E-00
1.500	0.300	1.050	0.201873E-00	0.610028E 00	-0.119332E-00
2.000	0.300	1.400	0.116219E-00	0.541423E 00	-0.151716E-00
2.500	0.300	1.750	0.694887E-01	0.474174E-00	-0.156079E-00
3.000	0.300	2.100	0.426143E-01	0.412342E-00	-0.147912E-00
3.500	0.300	2.450	0.266156E-01	0.357136E-00	-0.134654E-00
4.000	0.300	2.300	0.168553E-01	0.308589E-00	-0.119924E-00
4.500	0.300	3.150	0.107913E-01	0.266260E-00	-0.105449E-00
5.000	0.300	3.500	0.697014E-02	0.229532E-00	-0.920046E-01
5.500	0.300	3.850	0.453499E-02	0.197761E-00	-0.798880E-01
6.000	0.300	4.200	0.296876E-02	0.170326E-00	-0.691552E-01
6.500	0.300	4.550	0.195366E-02	0.146665E-00	-0.597467E-01
7.000	0.300	4.900	0.129148E-02	0.126271E-00	-0.515523E-01
7.500	0.300	5.250	0.857127E-03	0.108703E-00	-0.444447E-01
8.000	0.300	5.600	0.570840E-03	0.935731E-01	-0.382960E-01
8.500	0.300	5.950	0.381353E-03	0.805458E-01	-0.329858E-01
9.000	0.300	6.300	0.255471E-03	0.693302E-01	-0.284052E-01
9.500	0.300	6.650	0.171569E-03	0.596753E-01	-0.244566E-01

TABLE 2.—*The* Λ *and* Φ *operators of the exponential function* (continued)

τ	d	$\tau-d\tau$	$E_1(\tau-d\tau)$	$\Lambda(e^{-d\tau})$	$\Phi(e^{-d\tau})$
0.001	0.400	0.001	0.684197E 01	0.424087E-00	0.791787E 00
0.005	0.400	0.003	0.523492E 01	0.434043E-00	0.782677E 00
0.010	0.400	0.006	0.454477E 01	0.444021E-00	0.771518E 00
0.050	0.400	0.030	0.295912E 01	0.497368E-00	0.689134E 00
0.100	0.400	0.060	0.229531E 01	0.539615E 00	0.599017E 00
0.200	0.400	0.120	0.165954E 01	0.591069E 00	0.449474E-00
0.300	0.400	0.180	0.130980E 01	0.619347E 00	0.330160E-00
0.400	0.400	0.240	0.107624E 01	0.634115E 00	0.233443E-00
0.500	0.400	0.300	0.905677E 00	0.639971E 00	0.154374E-00
0.600	0.400	0.360	0.774462E 00	0.639593E 00	0.894336E-01
0.700	0.400	0.420	0.669997E 00	0.634712E 00	0.359809E-01
0.800	0.400	0.480	0.584784E 00	0.626526E 00	-0.802445E-02
0.900	0.400	0.540	0.514004E 00	0.615894E 00	-0.441983E-01
1.000	0.400	0.600	0.454379E-00	0.603456E 00	-0.738395E-01
1.100	0.400	0.660	0.403586E-00	0.589697E 00	-0.980079E-01
1.200	0.400	0.720	0.359918E-00	0.574989E 00	-0.117575E-00
1.300	0.400	0.780	0.322088E-00	0.559624E 00	-0.133263E-00
1.400	0.400	0.840	0.289103E-00	0.543832E 00	-0.145675E-00
1.500	0.400	0.900	0.260184E-00	0.527793E 00	-0.155319E-00
2.000	0.400	1.200	0.158408E-00	0.448048E-00	-0.174863E-00
2.500	0.400	1.500	0.100020E-00	0.374779E-00	-0.167985E-00
3.000	0.400	1.800	0.647131E-01	0.310948E-00	-0.150747E-00
3.500	0.400	2.100	0.426143E-01	0.256753E-00	-0.130573E-00
4.000	0.400	2.400	0.284403E-01	0.211380E-00	-0.110824E-00
4.500	0.400	2.700	0.191819E-01	0.173700E-00	-0.929052E-01
5.000	0.400	3.000	0.130484E-01	0.142565E-00	-0.772756E-01
5.500	0.400	3.300	0.893904E-02	0.116917E-00	-0.639484E-01
6.000	0.400	3.600	0.616041E-02	0.958329E-01	-0.527411E-01
6.500	0.400	3.900	0.426715E-02	0.785229E-01	-0.433992E-01
7.000	0.400	4.200	0.296876E-02	0.643240E-01	-0.356568E-01
7.500	0.400	4.500	0.207340E-02	0.526838E-01	-0.292646E-01
8.000	0.400	4.800	0.145299E-02	0.431452E-01	-0.240007E-01
8.500	0.400	5.100	0.102130E-02	0.353308E-01	-0.196737E-01
9.000	0.400	5.400	0.719804E-03	0.289301E-01	-0.161211E-01
9.500	0.400	5.700	0.508546E-03	0.236881E-01	-0.132067E-01

TABLE 2.—*The* Λ *and* Φ *operators of the exponential function* (continued)

τ	d	$\tau - d\tau$	$E_1(\tau - d\tau)$	$\Lambda(e^{-d\tau})$	$\Phi(e^{-d\tau})$
0.001	0.500	0.000	0.702419E 01	0.408927E-00	0.753909E 00
0.005	0.500	0.002	0.541675E 01	0.418742E-00	0.744559E 00
0.010	0.500	0.005	0.472610E 01	0.428539E-00	0.733109E 00
0.050	0.500	0.025	0.313651E 01	0.480318E-00	0.648596E 00
0.100	0.500	0.050	0.246790E 01	0.520419E 00	0.556306E 00
0.200	0.500	0.100	0.182292E 01	0.567266E 00	0.403767E-00
0.300	0.500	0.150	0.146446E 01	0.590787E 00	0.282906E-00
0.400	0.500	0.200	0.122265E 01	0.600826E 00	0.185765E-00
0.500	0.500	0.250	0.104428E 01	0.602086E 00	0.107146E-00
0.600	0.500	0.300	0.905677E 00	0.597310E 00	0.433322E-01
0.700	0.500	0.350	0.794215E 00	0.588274E 00	-0.847313E-02
0.800	0.500	0.400	0.702380E 00	0.576199E 00	-0.504379E-01
0.900	0.500	0.450	0.625331E 00	0.561961E 00	-0.842809E-01
1.000	0.500	0.500	0.559774E 00	0.546206E 00	-0.111386E-00
1.100	0.500	0.550	0.503364E 00	0.529419E 00	-0.132880E-00
1.200	0.500	0.600	0.454379E-00	0.511971E 00	-0.149690E-00
1.300	0.500	0.650	0.411517E-00	0.494146E-00	-0.162585E-00
1.400	0.500	0.700	0.373769E-00	0.476166E-00	-0.172205E-00
1.500	0.500	0.750	0.340341E-00	0.458202E-00	-0.179084E-00
2.000	0.500	1.000	0.219384E-00	0.372351E-00	-0.185906E-00
2.500	0.500	1.250	0.146413E-00	0.297724E-00	-0.168948E-00
3.000	0.500	1.500	0.100020E-00	0.235865E-00	-0.144443E-00
3.500	0.500	1.750	0.694887E-01	0.185805E-00	-0.119456E-00
4.000	0.500	2.000	0.489005E-01	0.145842E-00	-0.968498E-01
4.500	0.500	2.250	0.347621E-01	0.114202E-00	-0.775401E-01
5.000	0.500	2.500	0.249149E-01	0.892827E-01	-0.615678E-01
5.500	0.500	2.750	0.179789E-01	0.697235E-01	-0.486118E-01
6.000	0.500	3.000	0.130484E-01	0.544071E-01	-0.382335E-01
6.500	0.500	3.250	0.951651E-02	0.424323E-01	-0.299890E-01
7.000	0.500	3.500	0.697014E-02	0.330802E-01	-0.234767E-01
7.500	0.500	3.750	0.512410E-02	0.257822E-01	-0.183531E-01
8.000	0.500	4.000	0.377935E-02	0.200902E-01	-0.143333E-01
8.500	0.500	4.250	0.279565E-02	0.156526E-01	-0.111857E-01
9.000	0.500	4.500	0.207340E-02	0.121939E-01	-0.872471E-02
9.500	0.500	4.750	0.154136E-02	0.949871E-02	-0.680249E-02

TABLE 2.—*The* Λ *and* Φ *operators of the exponential function* (continued)

τ	d	$\tau-d\tau$	$E_1(\tau-d\tau)$	$\Lambda(e^{-d\tau})$	$\Phi(e^{-d\tau})$
0.001	0.600	0.000	0.724723E 01	0.395099E-00	0.719778E 00
0.005	0.600	0.002	0.563939E 01	0.404782E-00	0.710209E 00
0.010	0.600	0.004	0.494824E 01	0.414409E-00	0.698494E 00
0.050	0.600	0.020	0.335471E 01	0.464717E-00	0.612075E 00
0.100	0.600	0.040	0.268126E 01	0.502806E 00	0.517904E 00
0.200	0.600	0.080	0.202694E 01	0.545373E 00	0.362979E-00
0.300	0.600	0.120	0.165954E 01	0.564534E 00	0.241188E-00
0.400	0.600	0.160	0.140919E 01	0.570310E 00	0.144224E-00
0.500	0.600	0.200	0.122265E 01	0.567503E 00	0.666202E-01
0.600	0.600	0.240	0.107624E 01	0.558917E 00	0.444975E-02
0.700	0.600	0.280	0.957308E 00	0.546361E 00	-0.452491E-01
0.800	0.600	0.320	0.858335E 00	0.531074E 00	-0.847772E-01
0.900	0.600	0.360	0.774462E 00	0.513940E 00	-0.115959E-00
1.000	0.600	0.400	0.702380E 00	0.495603E-00	-0.140263E-00
1.100	0.600	0.440	0.639733E 00	0.476544E-00	-0.158885E-00
1.200	0.600	0.480	0.584784E 00	0.457121E-00	-0.172805E-00
1.300	0.600	0.520	0.536220E 00	0.437609E-00	-0.182835E-00
1.400	0.600	0.560	0.493020E-00	0.418213E-00	-0.189648E-00
1.500	0.600	0.600	0.454379E-00	0.399090E-00	-0.193804E-00
2.000	0.600	0.800	0.310597E-00	0.310745E-00	-0.188789E-00
2.500	0.600	1.000	0.219384E-00	0.237740E-00	-0.163390E-00
3.000	0.600	1.200	0.158408E-00	0.180014E-00	-0.133572E-00
3.500	0.600	1.400	0.116219E-00	0.135416E-00	-0.105736E-00
4.000	0.600	1.600	0.863083E-01	0.101426E-00	-0.820490E-01
4.500	0.600	1.800	0.647131E-01	0.757425E-01	-0.628419E-01
5.000	0.600	2.000	0.489005E-01	0.564443E-01	-0.477034E-01
5.500	0.600	2.200	0.371911E-01	0.420001E-01	-0.359852E-01
6.000	0.600	2.400	0.284403E-01	0.312181E-01	-0.270233E-01
6.500	0.600	2.600	0.218502E-01	0.231853E-01	-0.202266E-01
7.000	0.600	2.800	0.168553E-01	0.172092E-01	-0.151024E-01
7.500	0.600	3.000	0.130484E-01	0.127677E-01	-0.112557E-01
8.000	0.600	3.200	0.101330E-01	0.946927E-02	-0.837729E-02
8.500	0.600	3.400	0.789097E-02	0.702116E-02	-0.622841E-02
9.000	0.600	3.600	0.616041E-02	0.520495E-02	-0.462704E-02
9.500	0.600	3.800	0.482025E-02	0.385796E-02	-0.343527E-02

TABLE 2.—*The* Λ *and* Φ *operators of the exponential function* (continued)

τ	$\hat{a}$	$\tau - d\tau$	$E_1(\tau - d\tau)$	$\Lambda(e^{-d\tau})$	$\Phi(e^{-d\tau})$
0.001	0.700	0.000	0.753481E 01	0.382419E-00	0.688838E 00
0.005	0.700	0.001	0.592657E 01	0.391978E-00	0.679070E 00
0.010	0.700	0.003	0.523492E 01	0.401444E-00	0.667113E 00
0.050	0.700	0.015	0.363743E 01	0.450367E-00	0.578980E 00
0.100	0.700	0.030	0.295912E 01	0.486565E-00	0.483178E-00
0.200	0.700	0.060	0.229531E 01	0.525140E 00	0.326387E-00
0.300	0.700	0.090	0.191874E 01	0.540295E 00	0.204182E-00
0.400	0.700	0.120	0.165954E 01	0.542221E 00	0.107881E-00
0.500	0.700	0.150	0.146446E 01	0.535813E 00	0.317348E-01
0.600	0.700	0.180	0.130980E 01	0.523926E 00	-0.284057E-01
0.700	0.700	0.210	0.118290E 01	0.508396E 00	-0.756745E-01
0.800	0.700	0.240	0.107624E 01	0.490472E-00	-0.112508E-00
0.900	0.700	0.270	0.984933E 00	0.471036E-00	-0.140838E-00
1.000	0.700	0.300	0.905677E 00	0.450725E-00	-0.162216E-00
1.100	0.700	0.330	0.836101E 00	0.430006E-00	-0.177904E-00
1.200	0.700	0.360	0.774462E 00	0.409222E-00	-0.188933E-00
1.300	0.700	0.390	0.719437E 00	0.388628E-00	-0.196152E-00
1.400	0.700	0.420	0.669997E 00	0.368412E-00	-0.200262E-00
1.500	0.700	0.450	0.625331E 00	0.348711E-00	-0.201847E-00
2.000	0.700	0.600	0.454379E-00	0.260428E-00	-0.186275E-00
2.500	0.700	0.750	0.340341E-00	0.190858E-00	-0.154187E-00
3.000	0.700	0.900	0.260184E-00	0.138286E-00	-0.120860E-00
3.500	0.700	1.050	0.201873E-00	0.994534E-01	-0.917758E-01
4.000	0.700	1.200	0.158408E-00	0.711627E-01	-0.682955E-01
4.500	0.700	1.350	0.125417E-00	0.507360E-01	-0.501325E-01
5.000	0.700	1.500	0.100020E-00	0.360774E-01	-0.364472E-01
5.500	0.700	1.650	0.802476E-01	0.256037E-01	-0.263130E-01
6.000	0.700	1.800	0.647131E-01	0.181436E-01	-0.188979E-01
6.500	0.700	1.950	0.524144E-01	0.128425E-01	-0.135190E-01
7.000	0.700	2.100	0.426143E-01	0.908214E-02	-0.964180E-02
7.500	0.700	2.250	0.347621E-01	0.641841E-02	-0.686036E-02
8.000	0.700	2.400	0.284403E-01	0.453344E-02	-0.487226E-02
8.500	0.700	2.350	0.233293E-01	0.320066E-02	-0.345522E-02
9.000	0.700	2.700	0.191819E-01	0.225891E-02	-0.244743E-02
9.500	0.700	2.850	0.158054E-01	0.159382E-02	-0.173196E-02

TABLE 2.—*The Λ and Φ operators of the exponential function* (continued)

τ	$\bar{a}$	$\tau-\bar{a}\tau$	$E_1(\tau-\bar{a}\tau)$	$\Lambda(e^{-\bar{a}\tau})$	$\mathfrak{F}(e^{-\bar{a}\tau})$
0.001	0.800	0.000	0.794018E 01	0.370737E-00	0.660645E 00
0.005	0.800	0.001	0.633154E 01	0.380178E-00	0.650695E 00
0.010	0.800	0.002	0.563939E 01	0.389494E-00	0.638514E 00
0.050	0.800	0.010	0.403793E 01	0.437105E-00	0.548834E 00
0.100	0.800	0.020	0.335471E 01	0.471520E-00	0.451618E-00
0.200	0.800	0.040	0.268126E 01	0.506362E 00	0.293406E-00
0.300	0.800	0.060	0.229531E 01	0.517826E 00	0.171219E-00
0.400	0.800	0.080	0.202694E 01	0.516270E 00	0.759772E-01
0.500	0.800	0.100	0.182292E 01	0.506672E 00	0.163180E-02
0.600	0.800	0.120	0.165954E 01	0.491930E-00	-0.561951E-01
0.700	0.800	0.140	0.152415E 01	0.473898E-00	-0.100815E-00
0.800	0.800	0.160	0.140919E 01	0.453827E-00	-0.134801E-00
0.900	0.800	0.180	0.130980E 01	0.432589E-00	-0.160192E-00
1.000	0.800	0.200	0.122265E 01	0.410805E-00	-0.178620E-00
1.100	0.800	0.220	0.114538E 01	0.388924E-00	-0.191407E-00
1.200	0.800	0.240	0.107624E 01	0.367267E-00	-0.199631E-00
1.300	0.800	0.260	0.101389E 01	0.346067E-00	-0.204173E-00
1.400	0.800	0.280	0.957308E 00	0.325487E-00	-0.205760E-00
1.500	0.800	0.300	0.905677E 00	0.305641E-00	-0.204988E-00
2.000	0.800	0.400	0.702380E 00	0.219190E-00	-0.180304E-00
2.500	0.800	0.500	0.559774E 00	0.154075E-00	-0.143192E-00
3.000	0.800	0.600	0.454379E-00	0.106972E-00	-0.107877E-00
3.500	0.800	0.700	0.373769E-00	0.736591E-01	-0.787500E-01
4.000	0.800	0.800	0.310597E-00	0.504265E-01	-0.563173E-01
4.500	0.800	0.900	0.260184E-00	0.343754E-01	-0.397049E-01
5.000	0.800	1.000	0.219384E-00	0.233586E-01	-0.277058E-01
5.500	0.800	1.100	0.185991E-00	0.158335E-01	-0.191848E-01
6.000	0.800	1.200	0.158408E-00	0.107119E-01	-0.132064E-01
6.500	0.800	1.300	0.135451E-00	0.723584E-02	-0.904922E-02
7.000	0.800	1.400	0.116219E-00	0.488172E-02	-0.617807E-02
7.500	0.800	1.500	0.100020E-00	0.329018E-02	-0.420550E-02
8.000	0.800	1.600	0.863093E-01	0.221567E-02	-0.285591E-02
8.500	0.800	1.700	0.746546E-01	0.149105E-02	-0.193562E-02
9.000	0.800	1.800	0.647131E-01	0.100284E-02	-0.130975E-02
9.500	0.800	1.900	0.562044E-01	0.674163E-03	-0.885051E-03

TABLE 2.—*The* Λ *and* Φ *operators of the exponential function* (continued)

τ	d	$\tau-d\tau$	$E_1(\tau-d\tau)$	$\Lambda(e^{-d\tau})$	$\Phi(e^{-d\tau})$
0.001	0.900	0.000	0.863322E 01	0.359928E-00	0.634833E 00
0.005	0.900	0.000	0.702419E 01	0.369258E-00	0.624714E 00
0.010	0.900	0.001	0.633154E 01	0.378431E-00	0.612328E 00
0.050	0.900	0.005	0.472610E 01	0.424800E-00	0.521247E 00
0.100	0.900	0.010	0.403793E 01	0.457527E-00	0.422807E-00
0.200	0.900	0.020	0.335471E 01	0.488870E-00	0.263557E-00
0.300	0.900	0.030	0.295912E 01	0.496928E-00	0.141751E-00
0.400	0.900	0.040	0.268126E 01	0.492217E-00	0.478886E-01
0.500	0.900	0.050	0.246790E 01	0.479794E-00	-0.243903E-01
0.600	0.900	0.060	0.229531E 01	0.462589E-00	-0.797006E-01
0.700	0.900	0.070	0.215084E 01	0.442463E-00	-0.121534E-00
0.800	0.900	0.080	0.202694E 01	0.420662E-00	-0.152601E-00
0.900	0.900	0.090	0.191874E 01	0.398040E-00	-0.175041E-00
1.000	0.900	0.100	0.182292E 01	0.375199E-00	-0.190564E-00
1.100	0.900	0.110	0.173711E 01	0.352560E-00	-0.200549E-00
1.200	0.900	0.120	0.165954E 01	0.330419E-00	-0.206112E-00
1.300	0.900	0.130	0.158890E 01	0.308981E-00	-0.208163E-00
1.400	0.900	0.140	0.152415E 01	0.288384E-00	-0.207444E-00
1.500	0.900	0.150	0.146446E 01	0.268716E-00	-0.204562E-00
2.000	0.900	0.200	0.122265E 01	0.185283E-00	-0.172230E-00
2.500	0.900	0.250	0.104428E 01	0.125106E-00	-0.131578E-00
3.000	0.900	0.300	0.905677E 00	0.833691E-01	-0.954871E-01
3.500	0.900	0.350	0.794215E 00	0.550621E-01	-0.671597E-01
4.000	0.900	0.400	0.702380E 00	0.361337E-01	-0.462628E-01
4.500	0.900	0.450	0.625331E 00	0.235988E-01	-0.314032E-01
5.000	0.900	0.500	0.559774E 00	0.153553E-01	-0.210868E-01
5.500	0.900	0.550	0.503364E 00	0.996225E-02	-0.140430E-01
6.000	0.900	0.600	0.454379E-00	0.644813E-02	-0.929191E-02
6.500	0.900	0.650	0.411517E-00	0.416555E-02	-0.611655E-02
7.000	0.900	0.700	0.373769E-00	0.268668E-02	-0.400945E-02
7.500	0.900	0.750	0.340341E-00	0.173051E-02	-0.261914E-02
8.000	0.900	0.800	0.310597E-00	0.111336E-02	-0.170599E-02
8.500	0.900	0.850	0.284019E-00	0.715610E-03	-0.110849E-02
9.000	0.900	0.900	0.260184E-00	0.459569E-03	-0.718762E-03
9.500	0.900	0.950	0.238738E-00	0.294922E-03	-0.465224E-03

TABLE 2.—*The* Λ *and* Φ *operators of the exponential function* (continued)

τ	d	$\tau-d\tau$	$E_1(\tau-d\tau)$	$\Lambda(e^{-d\tau})$	$\Phi(e^{-d\tau})$
0.001	1.000	0.	−0.577216E 00	0.349891E−00	0.611101E 00
0.005	1.000	0.	−0.577216E 00	0.359115E−00	0.600825E 00
0.010	1.000	0.	−0.577216E 00	0.368152E−00	0.588250E 00
0.050	1.000	0.	−0.577216E 00	0.413338E−00	0.495896E−00
0.100	1.000	0.	−0.577216E 00	0.444465E−00	0.396398E−00
0.200	1.000	0.	−0.577216E 00	0.472520E−00	0.236443E−00
0.300	1.000	0.	−0.577216E 00	0.477430E−00	0.115323E−00
0.400	1.000	0.	−0.577216E 00	0.469861E−00	0.231008E−01
0.500	1.000	0.	−0.577216E 00	0.454936E−00	−0.469102E−01
0.600	1.000	0.	−0.577216E 00	0.435611E−00	−0.995660E−01
0.700	1.000	0.	−0.577216E 00	0.413746E−00	−0.138539E−00
0.800	1.000	0.	−0.577216E 00	0.390571E−00	−0.166673E−00
0.900	1.000	0.	−0.577216E 00	0.366919E−00	−0.186207E−00
1.000	1.000	0.	−0.577216E 00	0.343362E−00	−0.198922E−00
1.100	1.000	0.	−0.577216E 00	0.320292E−00	−0.206246E−00
1.200	1.000	0.	−0.577216E 00	0.297974E−00	−0.209328E−00
1.300	1.000	0.	−0.577216E 00	0.276584E−00	−0.209100E−00
1.400	1.000	0.	−0.577216E 00	0.256230E−00	−0.206312E−00
1.500	1.000	0.	−0.577216E 00	0.236974E−00	−0.201576E−00
2.000	1.000	0.	−0.577216E 00	0.157316E−00	−0.162993E−00
2.500	1.000	0.	−0.577216E 00	0.102203E−00	−0.120068E−00
3.000	1.000	0.	−0.577216E 00	0.654963E−01	−0.841210E−01
3.500	1.000	0.	−0.577216E 00	0.415810E−01	−0.571381E−01
4.000	1.000	0.	−0.577216E 00	0.262189E−01	−0.380094E−01
4.500	1.000	0.	−0.577216E 00	0.164473E−01	−0.249107E−01
5.000	1.000	0.	−0.577216E 00	0.102761E−01	−0.161456E−01
5.500	1.000	0.	−0.577216E 00	0.639976E−02	−0.103753E−01
6.000	1.000	0.	−0.577216E 00	0.397516E−02	−0.662216E−02
6.500	1.000	0.	−0.577216E 00	0.246374E−02	−0.420350E−02
7.000	1.000	0.	−0.577216E 00	0.152417E−02	−0.265618E−02
7.500	1.000	0.	−0.577216E 00	0.941430E−03	−0.167209E−02
8.000	1.000	0.	−0.577216E 00	0.580700E−03	−0.104922E−02
8.500	1.000	0.	−0.577216E 00	0.357768E−03	−0.656575E−03
9.000	1.000	0.	−0.577216E 00	0.220191E−03	−0.409891E−03
9.500	1.000	0.	−0.577216E 00	0.135394E−03	−0.255360E−03

TABLE 2.—*The* Λ *and* Φ *operators of the exponential function* (continued)

τ	d	$\tau - d\tau$	$E_1(\tau - d\tau)$	$\Lambda(e^{-d\tau})$	$\Phi(e^{-d\tau})$
0.001	2.000	-0.001	0.632954E 01	0.277766E-00	0.447803E-00
0.005	2.000	-0.005	0.471610E 01	0.286152E-00	0.436414E-00
0.010	2.000	-0.010	0.401793E 01	0.294105E-00	0.422517E-00
0.050	2.000	-0.050	0.236788E 01	0.329853E-00	0.322134E-00
0.100	2.000	-0.100	0.162281E 01	0.348436E-00	0.218044E-00
0.200	2.000	-0.200	0.821761E 00	0.352057E-00	0.623246E-01
0.300	2.000	-0.300	0.302669E-00	0.335625E-00	-0.427419E-01
0.400	2.000	-0.400	-0.104765E-00	0.310773E-00	-0.112256E-00
0.500	2.000	-0.500	-0.454220E-00	0.282757E-00	-0.156399E-00
0.600	2.000	-0.600	-0.769881E 00	0.254290E-00	-0.182375E-00
0.700	2.000	-0.700	-0.106491E 01	0.226822E-00	-0.195396E-00
0.800	2.000	-0.800	-0.134740E 01	0.201109E-00	-0.199277E-00
0.900	2.000	-0.900	-0.162281E 01	0.177508E-00	-0.196822E-00
1.000	2.000	-1.000	-0.189512E 01	0.156135E-00	-0.190096E-00
1.100	2.000	-1.100	-0.216738E 01	0.136968E-00	-0.180611E-00
1.200	2.000	-1.200	-0.244209E 01	0.119903E-00	-0.169475E-00
1.300	2.000	-1.300	-0.272140E 01	0.104794E-00	-0.157487E-00
1.400	2.000	-1.400	-0.300721E 01	0.914736E-01	-0.145217E-00
1.500	2.000	-1.500	-0.330129E 01	0.797694E-01	-0.133065E-00
2.000	2.000	-2.000	-0.495423E 01	0.399406E-01	-0.807841E-01
2.500	2.000	-2.500	-0.707377E 01	0.199950E-01	-0.463118E-01
3.000	2.000	-3.000	-0.993383E 01	0.100988E-01	-0.258820E-01
3.500	2.000	-3.500	-0.139254E 02	0.516756E-02	-0.143132E-01
4.000	2.000	-4.000	-0.196309E 02	0.268333E-02	-0.789396E-02
4.500	2.000	-4.500	-0.279337E 02	0.141407E-02	-0.436001E-02
5.000	2.000	-5.000	-0.401853E 02	0.755645E-03	-0.241696E-02
5.500	2.000	-5.500	-0.584655E 02	0.408937E-03	-0.134615E-02
6.000	2.000	-6.000	-0.859898E 02	0.223793E-03	-0.753555E-03
6.500	2.000	-6.500	-0.127747E 03	0.123666E-03	-0.423956E-03
7.000	2.000	-7.000	-0.191505E 03	0.689092E-04	-0.239665E-03
7.500	2.000	-7.500	-0.289388E 03	0.386729E-04	-0.136087E-03
8.000	2.000	-8.000	-0.440380E 03	0.218369E-04	-0.775863E-04

TABLE 2.—*The Λ and Φ operators of the exponential function* (continued)

τ	d	$\tau - d\tau$	$E_1(\tau - d\tau)$	$\Lambda(e^{-d\tau})$	$\Phi(e^{-d\tau})$
0.001	3.000	-0.002	0.563539E 01	0.234017E-00	0.355538E-00
0.005	3.000	-0.010	0.401793E 01	0.241802E-00	0.343492E-00
0.010	3.000	-0.020	0.331471E 01	0.248975E-00	0.328847E-00
0.050	3.000	-0.100	0.162281E 01	0.277955E-00	0.225115E-00
0.100	3.000	-0.200	0.821761E 00	0.287941E-00	0.122140E-00
0.200	3.000	-0.400	-0.104765E-00	0.276759E-00	-0.200636E-01
0.300	3.000	-0.600	-0.769881E 00	0.250083E-00	-0.104095E-00
0.400	3.000	-0.800	-0.134740E 01	0.219497E-00	-0.150649E-00
0.500	3.000	-1.000	-0.189512E 01	0.189549E-00	-0.172988E-00
0.600	3.000	-1.200	-0.244209E 01	0.162105E-00	-0.179864E-00
0.700	3.000	-1.400	-0.300721E 01	0.137817E-00	-0.177112E-00
0.800	3.000	-1.600	-0.360532E 01	0.116757E-00	-0.168620E-00
0.900	3.000	-1.800	-0.424987E 01	0.987303E-01	-0.156969E-00
1.000	3.000	-2.000	-0.495423E 01	0.834251E-01	-0.143848E-00
1.100	3.000	-2.300	-0.573261E 01	0.704989E-01	-0.130342E-00
1.200	3.000	-2.400	-0.660067E 01	0.596171E-01	-0.117127E-00
1.300	3.000	-2.600	-0.757611E 01	0.504728E-01	-0.104605E-00
1.400	3.000	-2.800	-0.867930E 01	0.427941E-01	-0.929913E-01
1.500	3.000	-3.000	-0.993383E 01	0.363458E-01	-0.823829E-01
2.000	3.000	-4.000	-0.196309E 02	0.165465E-01	-0.437798E-01
2.500	3.000	-5.000	-0.401853E 02	0.792069E-02	-0.230219E-01
3.000	3.000	-6.000	-0.859898E 02	0.395765E-02	-0.122069E-01
3.500	3.000	-7.000	-0.191505E 03	0.204376E-02	-0.655623E-02
4.000	3.000	-8.000	-0.440380E 03	0.108157E-02	-0.356605E-02
4.500	3.000	-9.000	-0.103788E 04	0.582873E-03	-0.196113E-02
5.000	3.000	-10.000	-0.249223E 04	0.318481E-03	-0.108855E-02
5.500	3.000	-11.000	-0.607141E 04	0.175897E-03	-0.608891E-03
6.000	3.000	-12.000	-0.149595E 05	0.979877E-04	-0.342802E-03
6.500	3.000	-13.000	-0.371977E 05	0.549733E-04	-0.194057E-03
7.000	3.000	-14.000	-0.931925E 05	0.310243E-04	-0.110371E-03
7.500	3.000	-15.000	-0.234956E 06	0.175972E-04	-0.630311E-04
8.000	3.000	-16.000	-0.595561E 06	0.100248E-04	-0.361248E-04

TABLE 2.—*The* Λ *and* Φ *operators of the exponential function* (continued)

τ	d	$\tau - d\tau$	$E_1(\tau - d\tau)$	$\Lambda(e^{-d\tau})$	$\Phi(e^{-d\tau})$
0.001	4.000	-0.003	0.522892E 01	0.204034E-00	0.295639E-00
0.005	4.000	-0.015	0.360743E 01	0.211351E-00	0.283157E-00
0.010	4.000	-0.030	0.289912E 01	0.217911E-00	0.268043E-00
0.050	4.000	-0.150	0.116409E 01	0.241632E-00	0.163182E-00
0.100	4.000	-0.300	0.302669E-00	0.245307E-00	0.637406E-01
0.200	4.000	-0.600	-0.769881E 00	0.224764E-00	-0.625350E-01
0.300	4.000	-0.900	-0.162281E 01	0.193539E-00	-0.126903E-00
0.400	4.000	-1.200	-0.244209E 01	0.162320E-00	-0.155108E-00
0.500	4.000	-1.500	-0.330129E 01	0.134461E-00	-0.162447E-00
0.600	4.000	-1.800	-0.424987E 01	0.110782E-00	-0.158156E-00
0.700	4.000	-2.100	-0.533324E 01	0.911433E-01	-0.147807E-00
0.800	4.000	-2.400	-0.660067E 01	0.750596E-01	-0.134723E-00
0.900	4.000	-2.700	-0.811035E 01	0.619683E-01	-0.120847E-00
1.000	4.000	-3.000	-0.993383E 01	0.513356E-01	-0.107268E-00
1.100	4.000	-3.300	-0.121610E 02	0.426960E-01	-0.945592E-01
1.200	4.000	-3.600	-0.149063E 02	0.356609E-01	-0.829832E-01
1.300	4.000	-3.900	-0.183157E 02	0.299136E-01	-0.726198E-01
1.400	4.000	-4.200	-0.225774E 02	0.251996E-01	-0.634466E-01
1.500	4.000	-4.500	-0.279337E 02	0.213158E-01	-0.553875E-01
2.000	4.000	-6.000	-0.859898E 02	0.973978E-02	-0.281714E-01
2.500	4.000	-7.500	-0.289388E 03	0.475954E-02	-0.146130E-01
3.000	4.000	-9.000	-0.103788E 04	0.242856E-02	-0.774338E-02
3.500	4.000	-10.500	-0.388374E 04	0.127500E-02	-0.417512E-02
4.000	4.000	-12.000	-0.149595E 05	0.682860E-03	-0.228186E-02
4.500	4.000	-13.500	-0.588270E 05	0.371168E-03	-0.126050E-02
5.000	4.000	-15.000	-0.234956E 06	0.204072E-03	-0.702305E-03
5.500	4.000	-16.300	-0.949881E 06	0.113237E-03	-0.394075E-03
6.000	4.000	-18.000	-0.387790E 07	0.633098E-04	-0.222439E-03
6.500	4.000	-19.500	-0.159596E 08	0.356211E-04	-0.126194E-03
7.000	4.000	-21.000	-0.661272E 08	0.201506E-04	-0.719055E-04
7.500	4.000	-22.500	-0.275573E 09	0.114523E-04	-0.411286E-04
8.000	4.000	-24.000	-0.115412E 10	0.653519E-05	-0.236040E-04

TABLE 2.—*The* Λ *and* Φ *operators of the exponential function* (continued)

τ	d	$\tau - d\tau$	$E_1(\tau - d\tau)$	$\Lambda(e^{-d\tau})$	$\Phi(e^{-d\tau})$
0.001	5.000	-0.004	0.494024E 01	0.181938E-00	0.253392E-00
0.005	5.000	-0.020	0.331471E 01	0.188868E-00	0.240600E-00
0.010	5.000	-0.040	0.260126E 01	0.194923E-00	0.225177E-00
0.050	5.000	-0.200	0.821761E 00	0.214369E-00	0.120412E-00
0.100	5.000	-0.400	-0.104765E-00	0.213239E-00	0.256150E-01
0.200	5.000	-0.800	-0.134740E 01	0.186749E-00	-0.847761E-01
0.300	5.000	-1.200	-0.244209E 01	0.154105E-00	-0.132426E-00
0.400	5.000	-1.600	-0.360532E 01	0.124518E-00	-0.147093E-00
0.500	5.000	-2.000	-0.495423E 01	0.999724E-01	-0.144968E-00
0.600	5.000	-2.400	-0.660067E 01	0.803194E-01	-0.134899E-00
0.700	5.000	-2.800	-0.867930E 01	0.648105E-01	-0.121669E-00
0.800	5.000	-3.200	-0.113673E 02	0.526222E-01	-0.107786E-00
0.900	5.000	-3.600	-0.149063E 02	0.430282E-01	-0.944970E-01
1.000	5.000	-4.000	-0.196309E 02	0.354388E-01	-0.823589E-01
1.100	5.000	-4.400	-0.260090E 02	0.293941E-01	-0.715583E-01
1.200	5.000	-4.800	-0.346979E 02	0.245421E-01	-0.620923E-01
1.300	5.000	-5.200	-0.466249E 02	0.206158E-01	-0.538681E-01
1.400	5.000	-5.600	-0.631018E 02	0.174130E-01	-0.467569E-01
1.500	5.000	-6.000	-0.859898E 02	0.147803E-01	-0.406221E-01
2.000	5.000	-8.000	-0.440380E 03	0.689121E-02	-0.204904E-01
2.500	5.000	-10.000	-0.249223E 04	0.342041E-02	-0.106524E-01
3.000	5.000	-12.000	-0.149595E 05	0.176247E-02	-0.566650E-02
3.500	5.000	-14.000	-0.931925E 05	0.931021E-03	-0.306555E-02
4.000	5.000	-16.000	-0.595561E 06	0.500690E-03	-0.167984E-02
4.500	5.000	-18.000	-0.387790E 07	0.272950E-03	-0.929838E-03
5.000	5.000	-20.000	-0.256157E 08	0.150404E-03	-0.518911E-03
5.500	5.000	-22.000	-0.171145E 09	0.836030E-04	-0.291554E-03
6.000	5.000	-24.000	-0.115412E 10	0.468080E-04	-0.164749E-03
6.500	5.000	-26.000	-0.784294E 10	0.263673E-04	-0.935519E-04
7.000	5.000	-28.000	-0.536451E 11	0.149306E-04	-0.533484E-04
7.500	5.000	-30.000	-0.368973E 12	0.849273E-05	-0.305353E-04
8.000	5.000	-32.000	-0.255004E 13	0.484991E-05	-0.175350E-04

TABLE 2.—*The* Λ *and* Φ *operators of the exponential function* (continued)

τ	d	$\tau-d\tau$	$E_1(\tau-d\tau)$	$\Lambda(e^{-d\tau})$	$\Phi(e^{-d\tau})$
0.001	6.000	-0.005	0.471610E 01	0.164843E-00	0.221894E-00
0.005	6.000	-0.025	0.308651E 01	0.171445E-00	0.208873E-00
0.010	6.000	-0.050	0.236788E 01	0.177068E-00	0.193241E-00
0.050	6.000	-0.250	0.542543E 00	0.192936E-00	0.893097E-01
0.100	6.000	-0.500	-0.454220E-00	0.188072E-00	-0.355303E-03
0.200	6.000	-1.000	-0.189512E 01	0.157899E-00	-0.958703E-01
0.300	6.000	-1.500	-0.330129E 01	0.125583E-00	-0.129894E-00
0.400	6.000	-2.000	-0.495423E 01	0.985285E-01	-0.134996E-00
0.500	6.000	-2.500	-0.707377E 01	0.773923E-01	-0.127285E-00
0.600	6.000	-3.000	-0.993383E 01	0.612502E-01	-0.114679E-00
0.700	6.000	-3.500	-0.139254E 02	0.489694E-01	-0.100965E-00
0.800	6.000	-4.000	-0.196309E 02	0.395769E-01	-0.878487E-01
0.900	6.000	-4.500	-0.279337E 02	0.323224E-01	-0.760052E-01
1.000	6.000	-5.000	-0.401853E 02	0.266523E-01	-0.656142E-01
1.100	6.000	-5.500	-0.584655E 02	0.221653E-01	-0.566303E-01
1.200	6.000	-6.000	-0.859898E 02	0.185715E-01	-0.489180E-01
1.300	6.000	-6.500	-0.127747E 03	0.156609E-01	-0.423160E-01
1.400	6.000	-7.000	-0.191505E 03	0.132798E-01	-0.366666E-01
1.500	6.000	-7.500	-0.289388E 03	0.113145E-01	-0.318277E-01
2.000	6.000	-10.000	-0.249223E 04	0.535128E-02	-0.160748E-01
2.500	6.000	-12.500	-0.235651E 05	0.267697E-02	-0.838368E-02
3.000	6.000	-15.000	-0.234956E 06	0.138556E-02	-0.447101E-02
3.500	6.000	-17.500	-0.242401E 07	0.734013E-03	-0.242331E-02
4.000	6.000	-20.000	-0.256157E 08	0.395531E-03	-0.132976E-02
4.500	6.000	-22.500	-0.275573E 09	0.215946E-03	-0.736862E-03
5.000	6.000	-25.000	-0.300595E 10	0.119132E-03	-0.411578E-03
5.500	6.000	-27.500	-0.331533E 11	0.662820E-04	-0.231414E-03
6.000	6.000	-30.000	-0.368973E 12	0.371389E-04	-0.130845E-03
6.500	6.000	-32.500	-0.413743E 13	0.209341E-04	-0.743378E-04
7.000	6.000	-35.000	-0.466906E 14	0.118605E-04	-0.424103E-04
7.500	6.000	-37.500	-0.529781E 15	0.674966E-05	-0.242840E-04
8.000	6.000	-40.000	-0.603972E 16	0.385610E-05	-0.139499E-04

TABLE 2.—*The* Λ *and* Φ *operators of the exponential function* (continued)

τ	d	$\tau - d\tau$	$E_1(\tau - d\tau)$	$\Lambda(e^{-d\tau})$	$\Phi(e^{-d\tau})$
0.001	7.000	-0.006	0.453277E 01	0.151147E-00	0.197453E-00
0.005	7.000	-0.030	0.289912E 01	0.157463E-00	0.184258E-00
0.010	7.000	-0.060	0.217528E 01	0.162710E-00	0.168485E-00
0.050	7.000	-0.300	0.302669E-00	0.175524E-00	0.658553E-01
0.100	7.000	-0.300	-0.769881E 00	0.167721E-00	-0.185190E-01
0.200	7.000	-1.200	-0.244209E 01	0.135415E-00	-0.100525E-00
0.300	7.000	-1.800	-0.424987E 01	0.104381E-00	-0.123704E-00
0.400	7.000	-2.400	-0.660067E 01	0.800901E-01	-0.122265E-00
0.500	7.000	-3.000	-0.993383E 01	0.620312E-01	-0.111518E-00
0.600	7.000	-3.600	-0.149063E 02	0.487301E-01	-0.981866E-01
0.700	7.000	-4.200	-0.225774E 02	0.388597E-01	-0.850781E-01
0.800	7.000	-4.800	-0.346979E 02	0.314263E-01	-0.732310E-01
0.900	7.000	-5.400	-0.541935E 02	0.257306E-01	-0.629122E-01
1.000	7.000	-6.000	-0.859898E 02	0.212899E-01	-0.540719E-01
1.100	7.000	-6.600	-0.138426E 03	0.177717E-01	-0.465483E-01
1.200	7.000	-7.200	-0.225688E 03	0.149445E-01	-0.401552E-01
1.300	7.000	-7.800	-0.372006E 03	0.126445E-01	-0.347175E-01
1.400	7.000	-8.400	-0.618919E 03	0.107540E-01	-0.300820E-01
1.500	7.000	-9.000	-0.103788E 04	0.918621E-02	-0.261195E-01
2.000	7.000	-12.000	-0.149595E 05	0.438143E-02	-0.132273E-01
2.500	7.000	-15.000	-0.234956E 06	0.220105E-02	-0.691421E-02
3.000	7.000	-18.000	-0.387790E 07	0.114206E-02	-0.369315E-02
3.500	7.000	-21.000	-0.661272E 08	0.606020E-03	-0.200398E-02
4.000	7.000	-24.000	-0.115412E 10	0.326954E-03	-0.110061E-02
4.500	7.000	-27.000	-0.204965E 11	0.178669E-03	-0.610295E-03
5.000	7.000	-30.000	-0.368973E 12	0.986384E-04	-0.341070E-03
5.500	7.000	-33.000	-0.671464E 13	0.549122E-04	-0.191858E-03
6.000	7.000	-36.000	-0.123285E 15	0.307833E-04	-0.108521E-03
6.500	7.000	-39.000	-0.228045E 16	0.173588E-04	-0.616750E-04
7.000	7.000	-42.000	-0.424480E 17	0.983834E-05	-0.351961E-04
7.500	7.000	-45.000	-0.794392E 18	0.560056E-05	-0.201582E-04
8.000	7.000	-48.000	-0.149363E 20	0.320046E-05	-0.115824E-04

TABLE 2.—*The* Λ *and* Φ *operators of the exponential function* (continued)

τ	d	$\tau - d\tau$	$E_1(\tau - d\tau)$	$\Lambda(e^{-d\tau})$	$\Phi(e^{-d\tau})$
0.001	8.000	-0.007	0.437762E 01	0.139882E-00	0.177908E-00
0.005	8.000	-0.035	0.273988E 01	0.145944E-00	0.164577E-00
0.010	8.000	-0.070	0.201080E 01	0.150857E-00	0.148712E-00
0.050	8.000	-0.350	0.894340E-01	0.161026E-00	0.476886E-01
0.100	8.000	-0.700	-0.106491E 01	0.150896E-00	-0.314199E-01
0.200	8.000	-1.400	-0.300721E 01	0.117533E-00	-0.101369E-00
0.300	8.000	-2.100	-0.533324E 01	0.882685E-01	-0.116054E-00
0.400	8.000	-2.800	-0.867930E 01	0.666507E-01	-0.110286E-00
0.500	8.000	-3.500	-0.139254E 02	0.512143E-01	-0.981103E-01
0.600	8.000	-4.200	-0.225774E 02	0.401409E-01	-0.850016E-01
0.700	8.000	-4.900	-0.373324E 02	0.320468E-01	-0.729112E-01
0.800	8.000	-5.600	-0.631018E 02	0.259913E-01	-0.623778E-01
0.900	8.000	-6.300	-0.108916E 03	0.213554E-01	-0.534055E-01
1.000	8.000	-7.000	-0.191505E 03	0.177319E-01	-0.458221E-01
1.100	8.000	-7.700	-0.342040E 03	0.148491E-01	-0.394195E-01
1.200	8.000	-8.400	-0.618919E 03	0.125215E-01	-0.340029E-01
1.300	8.000	-9.100	-0.113204E 04	0.106193E-01	-0.294058E-01
1.400	8.000	-9.800	-0.208905E 04	0.904930E-02	-0.254903E-01
1.500	8.000	-10.500	-0.388374E 04	0.774273E-02	-0.221435E-01
2.000	8.000	-14.000	-0.931925E 05	0.371175E-02	-0.112394E-01
2.500	8.000	-17.500	-0.242401E 07	0.186945E-02	-0.588415E-02
3.000	8.000	-21.000	-0.661272E 08	0.971548E-03	-0.314626E-02
3.500	8.000	-24.500	-0.186216E 10	0.516107E-03	-0.170853E-02
4.000	8.000	-28.000	-0.536451E 11	0.278670E-03	-0.938893E-03
4.500	8.000	-31.500	-0.157210E 13	0.152378E-03	-0.520863E-03
5.000	8.000	-35.000	-0.466906E 14	0.841658E-04	-0.291200E-03
5.500	8.000	-38.500	-0.140163E 16	0.468743E-04	-0.163857E-03
6.000	8.000	-42.000	-0.424480E 17	0.262861E-04	-0.927074E-04
6.500	8.000	-45.500	-0.129500E 19	0.148271E-04	-0.526998E-04
7.000	8.000	-49.000	-0.397544E 20	0.840549E-05	-0.300802E-04
7.500	8.000	-52.500	-0.122694E 22	0.478591E-05	-0.172311E-04
8.000	8.000	-56.000	-0.380433E 23	0.273544E-05	-0.990213E-05

TABLE 2.—*The* Λ *and* Φ *operators of the exponential function* (continued)

τ	d	$\tau - d\tau$	$E_1(\tau - d\tau)$	$\Lambda(e^{-d\tau})$	$\Phi(e^{-d\tau})$
0.001	9.000	−0.008	0.424308E 01	0.130423E−00	0.161903E−00
0.005	9.000	−0.040	0.260126E 01	0.136257E−00	0.148466E−00
0.010	9.000	−0.080	0.186688E 01	0.140870E−00	0.132545E−00
0.050	9.000	−0.400	−0.104765E−00	0.148721E−00	0.333287E−01
0.100	9.000	−0.800	−0.134740E 01	0.136748E−00	−0.406447E−01
0.200	9.000	−1.600	−0.360532E 01	0.103083E−00	−0.999486E−01
0.300	9.000	−2.400	−0.660067E 01	0.757930E−01	−0.108065E−00
0.400	9.000	−3.200	−0.113673E 02	0.566152E−01	−0.995447E−01
0.500	9.000	−4.000	−0.196309E 02	0.433518E−01	−0.869176E−01
0.600	9.000	−4.800	−0.346979E 02	0.340057E−01	−0.744805E−01
0.700	9.000	−5.600	−0.631018E 02	0.272251E−01	−0.634944E−01
0.800	9.000	−6.400	−0.117935E 03	0.221562E−01	−0.541491E−01
0.900	9.000	−7.200	−0.225688E 03	0.182643E−01	−0.462946E−01
1.000	9.000	−8.000	−0.440380E 03	0.152088E−01	−0.397036E−01
1.100	9.000	−8.800	−0.872895E 03	0.127666E−01	−0.341587E−01
1.200	9.000	−9.600	−0.175214E 04	0.107864E−01	−0.294747E−01
1.300	9.000	−10.400	−0.355306E 04	0.916229E−02	−0.255008E−01
1.400	9.000	−11.200	−0.726534E 04	0.781772E−02	−0.221152E−01
1.500	9.000	−12.000	−0.149595E 05	0.669604E−02	−0.192200E−01
2.000	9.000	−16.000	−0.595561E 06	0.322061E−02	−0.977232E−02
2.500	9.000	−20.000	−0.256157E 08	0.162493E−02	−0.512168E−02
3.000	9.000	−24.000	−0.115412E 10	0.845421E−03	−0.274061E−02
3.500	9.000	−28.000	−0.536451E 11	0.449457E−03	−0.148907E−02
4.000	9.000	−32.000	−0.255004E 13	0.242824E−03	−0.818640E−03
4.500	9.000	−36.000	−0.123285E 15	0.132838E−03	−0.454304E−03
5.000	9.000	−40.000	−0.603972E 16	0.733991E−04	−0.254059E−03
5.500	9.000	−44.000	−0.299045E 18	0.408901E−04	−0.142991E−03
6.000	9.000	−48.000	−0.149363E 20	0.229359E−04	−0.809176E−04
6.500	9.000	−52.000	−0.751479E 21	0.129400E−04	−0.460056E−04
7.000	9.000	−56.000	−0.380433E 23	0.733706E−05	−0.262631E−04
7.500	9.000	−60.000	−0.193618E 25	0.417822E−05	−0.150465E−04
8.000	9.000	−64.000	−0.989965E 26	0.238843E−05	−0.864767E−05

TABLE 2.—*The* Λ *and* Φ *operators of the exponential function* (continued)

τ	d	$\tau - d\tau$	$E_1(\tau - d\tau)$	$\Lambda(e^{-d\tau})$	$\Phi(e^{-d\tau})$
0.001	10.000	-0.009	0.412429E 01	0.122348E-00	0.148547E-00
0.005	10.000	-0.045	0.247837E 01	0.127974E-00	0.135026E-00
0.010	10.000	-0.090	0.173866E 01	0.132315E-00	0.119075E-00
0.050	10.000	-0.450	-0.284855E-00	0.138119E-00	0.217977E-01
0.100	10.000	-0.900	-0.162281E 01	0.124687E-00	-0.472321E-01
0.200	10.000	-1.800	-0.424987E 01	0.912483E-01	-0.972053E-01
0.300	10.000	-2.700	-0.811035E 01	0.659729E-01	-0.100297E-00
0.400	10.000	-3.600	-0.149063E 02	0.489537E-01	-0.901288E-01
0.500	10.000	-4.500	-0.279337E 02	0.374671E-01	-0.776204E-01
0.600	10.000	-5.400	-0.541935E 02	0.294605E-01	-0.660295E-01
0.700	10.000	-6.300	-0.108916E 03	0.236635E-01	-0.560901E-01
0.800	10.000	-7.200	-0.225688E 03	0.193187E-01	-0.477636E-01
0.900	10.000	-8.100	-0.479322E 03	0.159681E-01	-0.408187E-01
1.000	10.000	-9.000	-0.103788E 04	0.133256E-01	-0.350112E-01
1.100	10.000	-9.900	-0.228158E 04	0.112050E-01	-0.301315E-01
1.200	10.000	-10.800	-0.507596E 04	0.947987E-02	-0.260103E-01
1.300	10.000	-11.700	-0.114018E 05	0.806117E-02	-0.225127E-01
1.400	10.000	-12.600	-0.258137E 05	0.688422E-02	-0.195313E-01
1.500	10.000	-13.500	-0.588270E 05	0.590075E-02	-0.169803E-01
2.000	10.000	18.000	-0.387790E 07	0.284467E-02	-0.864472E-02
2.500	10.000	-22.300	-0.275573E 09	0.143710E-02	-0.453438E-02
3.000	10.000	-27.000	-0.204965E 11	0.748318E-03	-0.242771E-02
3.500	10.000	-31.500	-0.157210E 13	0.398068E-03	-0.131961E-02
4.000	10.000	-36.000	-0.123285E 15	0.215156E-03	-0.725708E-03
4.500	10.000	-40.500	-0.983159E 16	0.117742E-03	-0.402835E-03
5.000	10.000	-45.000	-0.794392E 18	0.650757E-04	-0.225324E-03
5.500	10.000	-49.500	-0.648677E 20	0.362613E-04	-0.126840E-03
6.000	10.000	-54.000	-0.534303E 22	0.203434E-04	-0.717889E-04
6.500	10.000	-58.500	-0.443298E 24	0.114792E-04	-0.408207E-04
7.000	10.000	-63.000	-0.370065E 26	0.650967E-05	-0.233058E-04
7.500	10.000	-67.500	-0.310569E 28	0.370749E-05	-0.133535E-04
8.000	10.000	-72.000	-0.261838E 30	0.211957E-05	-0.767536E-05

TABLE 2.—*The Λ and Φ operators of the exponential function* (continued)

τ	d	$\tau-d\tau$	$E_1(\tau-d\tau)$	$\Lambda(e^{-d\tau})$	$\Phi(e^{-d\tau})$
0.001	15.000	-0.014	0.367743E 01	0.946800E-01	0.105093E-00
0.005	15.000	-0.070	0.201080E 01	0.994824E-01	0.913520E-01
0.010	15.000	-0.140	0.124384E 01	0.102743E-00	0.755014E-01
0.050	15.000	-0.700	-0.106491E 01	0.101133E-00	-0.113824E-01
0.100	15.000	-1.400	-0.300721E 01	0.841239E-01	-0.592710E-01
0.200	15.000	-2.800	-0.867930E 01	0.553805E-01	-0.780517E-01
0.300	15.000	-4.200	-0.225774E 02	0.385991E-01	-0.698794E-01
0.400	15.000	-5.600	-0.631018E 02	0.286375E-01	-0.588914E-01
0.500	15.000	-7.000	-0.191505E 03	0.221922E-01	-0.493229E-01
0.600	15.000	-8.400	-0.618919E 03	0.176926E-01	-0.415096E-01
0.700	15.000	-9.800	-0.208905E 04	0.143766E-01	-0.351527E-01
0.800	15.000	-11.200	-0.726534E 04	0.118412E-01	-0.299363E-01
0.900	15.000	-12.600	-0.258137E 05	0.985245E-02	-0.256142E-01
1.000	15.000	-14.000	-0.931925E 05	0.826306E-02	-0.220028E-01
1.100	15.000	-15.400	-0.340645E 06	0.697473E-02	-0.189641E-01
1.200	15.000	-16.800	-0.125760E 07	0.591872E-02	-0.163922E-01
1.300	15.000	-18.200	-0.468093E 07	0.504527E-02	-0.142048E-01
1.400	15.000	-19.600	-0.175426E 08	0.431737E-02	-0.123366E-01
1.500	15.000	-21.000	-0.661272E 08	0.370692E-02	-0.107353E-01
2.000	15.000	-28.000	-0.536451E 11	0.179735E-02	-0.548386E-02
2.500	15.000	-35.000	-0.466906E 14	0.911047E-03	-0.288264E-02
3.000	15.000	-42.000	-0.424480E 17	0.475449E-03	-0.154571E-02

TABLE 2.—*The* Λ *and* Φ *operators of the exponential function* (continued)

τ	d	$\tau-d\tau$	$E_1(\tau-d\tau)$	$\Lambda(e^{-d\tau})$	$\Phi(e^{-d\tau})$
0.001	20.000	-0.019	0.336701E 01	0.782326E-01	0.811263E-01
0.005	20.000	-0.095	0.167936E 01	0.824277E-01	0.673437E-01
0.010	20.000	-0.190	0.884095E 00	0.849009E-01	0.517989E-01
0.050	20.000	-0.950	-0.175915E 01	0.787968E-01	-0.249669E-01
0.100	20.000	-1.900	-0.459371E 01	0.614540E-01	-0.574782E-01
0.200	20.000	-3.800	-0.170948E 02	0.384396E-01	-0.614449E-01
0.300	20.000	-5.700	-0.681350E 02	0.268704E-01	-0.517898E-01
0.400	20.000	-7.600	-0.314572E 03	0.201985E-01	-0.429094E-01
0.500	20.000	-9.500	-0.160503E 04	0.158162E-01	-0.358185E-01
0.600	20.000	-11.400	-0.869781E 04	0.126955E-01	-0.301563E-01
0.700	20.000	-13.300	-0.489620E 05	0.103621E-01	-0.255670E-01
0.800	20.000	-15.200	-0.282878E 06	0.856076E-02	-0.217973E-01
0.900	20.000	-17.100	-0.166563E 07	0.713879E-02	-0.186682E-01
1.000	20.000	-19.000	-0.995091E 07	0.599736E-02	-0.160490E-01
1.100	20.000	-20.900	-0.601369E 08	0.506915E-02	-0.138419E-01
1.200	20.000	-22.800	-0.366840E 09	0.430643E-02	-0.119717E-01
1.300	20.000	-24.700	-0.225517E 10	0.367432E-02	-0.103794E-01
1.400	20.000	-26.600	-0.139546E 11	0.314670E-02	-0.901833E-02
1.500	20.000	-28.500	-0.868329E 11	0.270363E-02	-0.785080E-02
2.000	20.000	-38.000	-0.861639E 15	0.131403E-02	-0.401623E-02
2.500	20.000	-47.500	-0.915684E 19	0.667026E-03	-0.211318E-02
3.000	20.000	-57.000	-0.101564E 24	0.348443E-03	-0.113388E-02

TABLE 2.—*The Λ and Φ operators of the exponential function* (continued)

τ	d	$\tau-d\tau$	$E_1(\tau-d\tau)$	$\Lambda(e^{-d\tau})$	$\Phi(e^{-d\tau})$
0.001	25.000	-0.024	0.312834E 01	0.671701E-01	0.658889E-01
0.005	25.000	-0.120	0.141935E 01	0.708832E-01	0.521476E-01
0.010	25.000	-0.240	0.594697E 00	0.727423E-01	0.369957E-01
0.050	25.000	-1.200	-0.244209E 01	0.638100E-01	-0.305956E-01
0.100	25.000	-2.400	-0.660067E 01	0.474262E-01	-0.522582E-01
0.200	25.000	-4.300	-0.346979E 02	0.291396E-01	-0.495203E-01
0.300	25.000	-7.200	-0.225688E 03	0.206109E-01	-0.407385E-01
0.400	25.000	-9.600	-0.175214E 04	0.156386E-01	-0.336444E-01
0.500	25.000	-12.000	-0.149595E 05	0.123105E-01	-0.281006E-01
0.600	25.000	-14.400	-0.134809E 06	0.991236E-02	-0.236806E-01
0.700	25.000	-16.800	-0.125760E 07	0.810694E-02	-0.200929E-01
0.800	25.000	-19.200	-0.120195E 08	0.670741E-02	-0.171413E-01
0.900	25.000	-21.600	-0.116962E 09	0.559945E-02	-0.146882E-01
1.000	25.000	-24.000	-0.115412E 10	0.470824E-02	-0.126330E-01
1.100	25.000	-26.400	-0.115154E 11	0.398237E-02	-0.108997E-01
1.200	25.000	-28.800	-0.115943E 12	0.338516E-02	-0.942995E-02
1.300	25.000	-31.200	-0.117623E 13	0.288972E-02	-0.817800E-02
1.400	25.000	-33.600	-0.120092E 14	0.247583E-02	-0.710733E-02
1.500	25.000	-36.000	-0.123285E 15	0.212801E-02	-0.618854E-02
2.000	25.000	-48.000	-0.149363E 20	0.103563E-02	-0.316844E-02
2.500	25.000	-60.000	-0.193618E 25	0.526132E-03	-0.166800E-02
3.000	25.000	-72.000	-0.261838E 30	0.274995E-03	-0.895353E-03

TABLE 2.—*The* Λ *and* Φ *operators of the exponential function* (continued)

τ	d	$\tau-d\tau$	$E_1(\tau-d\tau)$	$\Lambda(e^{-d\tau})$	$\Phi(e^{-d\tau})$
0.001	30.000	-0.029	0.293403E 01	0.591490E-01	0.553283E-01
0.005	30.000	-0.145	0.120338E 01	0.624624E-01	0.416739E-01
0.010	30.000	-0.290	0.348202E-00	0.638230E-01	0.269547E-01
0.050	30.000	-1.450	-0.315311E 01	0.531055E-01	-0.325190E-01
0.100	30.000	-2.900	-0.928602E 01	0.381428E-01	-0.466171E-01
0.200	30.000	-5.800	-0.736008E 02	0.234209E-01	-0.410723E-01
0.300	30.000	-8.700	-0.800749E 03	0.167418E-01	-0.334901E-01
0.400	30.000	-11.600	-0.104170E 05	0.127731E-01	-0.276601E-01
0.500	30.000	-14.500	-0.147866E 06	0.100834E-01	-0.231207E-01
0.600	30.000	-17.400	-0.220683E 07	0.913316E-02	-0.194967E-01
0.700	30.000	-20.300	-0.340365E 08	0.665962E-02	-0.165511E-01
0.800	30.000	-23.200	-0.537353E 09	0.551471E-02	-0.141254E-01
0.900	30.000	-26.100	-0.863313E 10	0.460684E-02	-0.121079E-01
1.000	30.000	-29.000	-0.140599E 12	0.387568E-02	-0.104165E-01
1.100	30.000	-31.900	-0.231486E 13	0.327959E-02	-0.898935E-02
1.200	30.000	-34.800	-0.384536E 14	0.278880E-02	-0.777878E-02
1.300	30.000	-37.700	-0.643544E 15	0.238138E-02	-0.674722E-02
1.400	30.000	-40.600	-0.108381E 17	0.204085E-02	-0.586477E-02
1.500	30.000	-43.500	-0.183516E 18	0.175455E-02	-0.510733E-02
2.000	30.000	-58.000	-0.271234E 24	0.854593E-03	-0.261623E-02
2.500	30.000	-72.500	-0.428678E 30	0.434387E-03	-0.137777E-02
3.000	30.000	-87.000	-0.706613E 36	0.217473E-03	-0.738458E-03

TABLE 3.—*The Λ operators of* (τ^M)

τ	m=0	m=1	m=2	m=3	m=4	m=5
0.00	.500000E+00	.250000E+00	.333333E+00	.750000E+00	.240000E+01	.100000E+02
0.01	.525165E+00	.255138E+00	.338384E+00	.760075E+00	.243020E+01	.101208E+02
0.02	.543448E+00	.260484E+00	.343540E+00	.770304E+00	.246081E+01	.102430E+02
0.03	.559164E+00	.265999E+00	.348805E+00	.780689E+00	.249183E+01	.103668E+02
0.04	.573230E+00	.271662E+00	.354181E+00	.791233E+00	.252326E+01	.104922E+02
0.05	.586083E+00	.277459E+00	.359672E+00	.801941E+00	.255513E+01	.106192E+02
0.06	.597977E+00	.283380E+00	.365280E+00	.812815E+00	.258742E+01	.107477E+02
0.07	.609082E+00	.289416E+00	.371008E+00	.823859E+00	.262016E+01	.108779E+02
0.08	.619519E+00	.295560E+00	.376858E+00	.835077E+00	.265333E+01	.110098E+02
0.09	.629378E+00	.301805E+00	.382831E+00	.846472E+00	.268696E+01	.111433E+02
0.10	.638728E+00	.308146E+00	.388930E+00	.858048E+00	.272105E+01	.112785E+02
0.12	.656112E+00	.321097E+00	.401514E+00	.881758E+00	.279064E+01	.115540E+02
0.14	.672011E+00	.334380E+00	.414623E+00	.906240E+00	.286216E+01	.118366E+02
0.16	.686663E+00	.347969E+00	.428269E+00	.931524E+00	.293566E+01	.121265E+02
0.18	.700246E+00	.361840E+00	.442464E+00	.957643E+00	.301122E+01	.124238E+02
0.20	.712900E+00	.375963E+00	.457219E+00	.984631E+00	.308891E+01	.127288E+02
0.24	.735834E+00	.404957E+00	.488450E+00	.104135E+01	.325094E+01	.133627E+02
0.28	.756131E+00	.434804E+00	.522036E+00	.110195E+01	.342234E+01	.140298E+02
0.32	.774259E+00	.465419E+00	.558040E+00	.116673E+01	.360378E+01	.147323E+02
0.36	.790565E+00	.496721E+00	.596521E+00	.123598E+01	.379594E+01	.154721E+02
0.40	.805316E+00	.528643E+00	.637531E+00	.131000E+01	.399955E+01	.162514E+02
0.44	.818723E+00	.561128E+00	.681119E+00	.138909E+01	.421541E+01	.170727E+02
0.48	.830956E+00	.594125E+00	.727326E+00	.147357E+01	.444435E+01	.179385E+02
0.52	.842157E+00	.627591E+00	.776191E+00	.156376E+01	.468726E+01	.188514E+02
0.56	.852441E+00	.661486E+00	.827752E+00	.165997E+01	.494507E+01	.198144E+02
0.60	.861908E+00	.695775E+00	.882040E+00	.176253E+01	.521878E+01	.208305E+02
0.64	.870642E+00	.730429E+00	.939085E+00	.187177E+01	.550944E+01	.219030E+02
0.72	.886194E+00	.800718E+00	.106156E+01	.211162E+01	.614600E+01	.242315E+02
0.80	.899574E+00	.872162E+00	.119538E+01	.238222E+01	.686415E+01	.268307E+02
0.90	.913798E+00	.962851E+00	.137885E+01	.276790E+01	.789234E+01	.305134E+02
1.00	.929752E+00	.105485E+01	.158060E+01	.321136E+01	.908618E+01	.347506E+02
1.10	.935859E+00	.114794E+01	.180086E+01	.371812E+01	.104699E+02	.396312E+02
1.20	.944448E+00	.124197E+01	.203984E+01	.429375E+01	.120698E+02	.452565E+02
1.30	.951777E+00	.133679E+01	.229770E+01	.494391E+01	.139148E+02	.517418E+02
1.40	.958055E+00	.143229E+01	.257460E+01	.567428E+01	.160357E+02	.592173E+02
1.50	.963450E+00	.152837E+01	.287066E+01	.649059E+01	.184657E+02	.678290E+02
1.60	.968098E+00	.162495E+01	.318598E+01	.739860E+01	.212404E+02	.777404E+02
1.70	.972115E+00	.172197E+01	.352067E+01	.840412E+01	.243976E+02	.891332E+02
1.80	.975592E+00	.181936E+01	.387480E+01	.951295E+01	.279774E+02	.102208E+03
1.90	.978610E+00	.191707E+01	.424843E+01	.107309E+02	.320225E+02	.117188E+03
2.00	.981233E+00	.201507E+01	.464164E+01	.120640E+02	.365775E+02	.134316E+03
3.00	.994679E+00	.300446E+01	.965900E+01	.330220E+02	.121729E+03	.495320E+03
4.00	.998401E+00	.400138E+01	.166642E+02	.720065E+02	.324777E+03	.154677E+04
5.00	.999502E+00	.500044E+01	.256659E+02	.135002E+03	.729792E+03	.407837E+04
6.00	.999841E+00	.600014E+01	.366664E+02	.228001E+03	.144480E+04	.936001E+04
7.00	.999948E+00	.700005E+01	.496666E+02	.357000E+03	.260180E+04	.192617E+05
8.00	.999983E+00	.800002E+01	.646666E+02	.528000E+03	.435680E+04	.363733E+05
9.00	.999994E+00	.900000E+01	.816666E+02	.747000E+03	.688980E+04	.641250E+05
9.50	.999997E+00	.950000E+01	.909167E+02	.876375E+03	.851086E+04	.833219E+05

TABLE 4.—*The Φ operators of* (τ^M)

τ	m=0	m=1	m=2	m=3	m=4	m=5
0.00	.100000E+01	.666667E+00	.100000E+01	.240000E+01	.800000E+01	.342857E+02
0.01	.980553E+00	.676568E+00	.101343E+01	.243020E+01	.809660E+01	.346881E+02
0.02	.961936E+00	.686280E+00	.102706E+01	.246081E+01	.819442E+01	.350954E+02
0.03	.943995E+00	.695810E+00	.104088E+01	.249183E+01	.829347E+01	.355076E+02
0.04	.926648E+00	.705162E+00	.105489E+01	.252326E+01	.839377E+01	.359248E+02
0.05	.909838E+00	.714344E+00	.106909E+01	.255512E+01	.849534E+01	.363470E+02
0.06	.893522E+00	.723361E+00	.108346E+01	.258741E+01	.859819E+01	.367743E+02
0.07	.877665E+00	.732216E+00	.109802E+01	.262013E+01	.870234E+01	.372068E+02
0.08	.862239E+00	.740916E+00	.111275E+01	.265329E+01	.880781E+01	.376446E+02
0.09	.847219E+00	.749462E+00	.112766E+01	.268690E+01	.891461E+01	.380876E+02
0.10	.832583E+00	.757861E+00	.114273E+01	.272095E+01	.902276E+01	.385360E+02
0.12	.804387E+00	.774228E+00	.117337E+01	.279043E+01	.924321E+01	.394493E+02
0.14	.777521E+00	.790046E+00	.120466E+01	.286177E+01	.946929E+01	.403849E+02
0.16	.751876E+00	.805338E+00	.123657E+01	.293500E+01	.970114E+01	.413434E+02
0.18	.727359E+00	.820128E+00	.126908E+01	.301017E+01	.993893E+01	.423253E+02
0.20	.703891E+00	.834439E+00	.130217E+01	.308731E+01	.101828E+02	.433314E+02
0.24	.659828E+00	.861701E+00	.137003E+01	.324762E+01	.106895E+02	.454182E+02
0.28	.619217E+00	.887271E+00	.144000E+01	.341620E+01	.112225E+02	.476089E+02
0.32	.581675E+00	.911279E+00	.151195E+01	.359330E+01	.117831E+02	.499090E+02
0.36	.546883E+00	.933842E+00	.158577E+01	.377914E+01	.123728E+02	.523241E+02
0.40	.514573E+00	.955063E+00	.166133E+01	.397393E+01	.129929E+02	.548602E+02
0.44	.484513E+00	.975038E+00	.173854E+01	.417793E+01	.136450E+02	.575234E+02
0.48	.456502E+00	.993851E+00	.181731E+01	.439126E+01	.143304E+02	.603204E+02
0.52	.430364E+00	.101158E+01	.189753E+01	.461414E+01	.150507E+02	.632579E+02
0.56	.405943E+00	.102830E+01	.197913E+01	.484673E+01	.158074E+02	.663431E+02
0.60	.383101E+00	.104408E+01	.206204E+01	.508918E+01	.166022E+02	.695834E+02
0.64	.361714E+00	.105897E+01	.214616E+01	.534166E+01	.174365E+02	.729866E+02
0.72	.322872E+00	.108632E+01	.231783E+01	.587726E+01	.192304E+02	.803142E+02
0.80	.288648E+00	.111075E+01	.249363E+01	.645455E+01	.212024E+02	.883946E+02
0.90	.251406E+00	.113771E+01	.271854E+01	.723624E+01	.239383E+02	.996668E+02
1.00	.219384E+00	.116121E+01	.294848E+01	.808618E+01	.270005E+02	.112387E+03
1.10	.191762E+00	.118173E+01	.318282E+01	.900577E+01	.304165E+02	.126726E+03
1.20	.167869E+00	.119968E+01	.342100E+01	.999626E+01	.342146E+02	.142868E+03
1.30	.147153E+00	.121541E+01	.366255E+01	.110587E+02	.384231E+02	.161009E+03
1.40	.129151E+00	.122920E+01	.390704E+01	.121941E+02	.430712E+02	.181364E+03
1.50	.113479E+00	.124132E+01	.415411E+01	.134032E+02	.481882E+02	.204159E+03
1.60	.998114E-01	.125197E+01	.440347E+01	.146868E+02	.538037E+02	.229635E+03
1.70	.878734E-01	.126134E+01	.465482E+01	.160455E+02	.599477E+02	.258050E+03
1.80	.774314E-01	.126959E+01	.490793E+01	.174798E+02	.666502E+02	.289676E+03
1.90	.682860E-01	.127687E+01	.516259E+01	.189904E+02	.739417E+02	.324799E+03
2.00	.602668E-01	.128329E+01	.541862E+01	.205775E+02	.818527E+02	.363721E+03
3.00	.178612E-01	.131800E+01	.802679E+01	.407287E+02	.201856E+03	.103941E+04
4.00	.552272E-02	.132849E+01	.106753E+02	.687767E+02	.418218E+03	.254285E+04
5.00	.175560E-02	.133177E+01	.133362E+02	.104792E+03	.762695E+03	.543511E+04
6.00	.569200E-03	.133282E+01	.160001E+02	.148797E+03	.126721E+04	.104365E+05
7.00	.187320E-03	.133316E+01	.186670E+02	.200799E+03	.196374E+04	.184272E+05
8.00	.623600E-04	.133328E+01	.213334E+02	.260800E+03	.288427E+04	.304472E+05
9.00	.209600E-04	.133331E+01	.240000E+02	.328800E+03	.406080E+04	.476966E+05
9.50	.121800E-04	.133332E+01	.253334E+02	.365800E+03	.475507E+04	.587010E+05