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Authors

Miyauchi, Terukatsu
McMullen, Alice K.
Vermeulen, Theodore.

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ABSTRACT

The mathematical derivation of solutions for longitudinal dispersion in chemical-process equipment, carried out previously by Miyauchi for countercurrent flow, is extended here to the case of cocurrent flow. These results are particularly applicable to certain types of heat exchangers, flash evaporators, and line-mixing solvent extractors. The extent of completion of the process, in dimensionless form, is given as an analytical function of rates of dispersion in the two-phases, over-all heat- or mass-transfer coefficient, partition coefficient, rates of fluid flow, and fractional height in the equipment. Numerical results for a large number of typical conditions, obtained on the IBM 701 computer, are given in tabular form.

LONGITUDINAL DISPERSION IN TWO-PHASE CONTINUOUS - FLOW OPERATIONS: SOLUTION AND TABLES FOR COCURRENT FLOW

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INTRODUCTION

Logitudinal dispersion, or axial mixing, has recently been studied widely as a factor affecting the performance of process equipment, particularly in various types of solvent-extraction columns. In order to describe this effect with reasonable accuracy, Miyauchi applied a diffusion model to the countercurrent case, and arrived at an exact analytical solution of considerable complexity.¹ Numerical solution values, corresponding to representative values of the controlling parameters, were then developed by using the IBM 701 computer, and have been tabulated in another report.²

As a logical extension of this earlier work, the differential equations have now been solved with boundary conditions corresponding to cocurrent (or parallel) flow. This solution will prove applicable to various kinds of equipment embodying such flow, including flash evaporators, line-mixing solvent extractors, and certain heat exchangers. Because the solution is algebraically similar to the countercurrent case, it has also been evaluated numerically on the IBM 701 computer, and the results are tabulated herein.

GENERAL SOLUTION FOR COCURRENT FLOW

For one-dimensional steady-state cocurrent flow of two immiscible fluids, the continuity equations are

$$\begin{aligned} E_x d^2 c_x / dz^2 - F_x dc_x / dz - K_{ox} a [c_x - (q + mc_y)] &= 0, \\ E_y d^2 c_y / dz^2 - F_y dc_y / dz + k_{ox} a [c_x - (q + mc_y)] &= 0, \end{aligned} \quad (1)$$

where subscripts x and y refer to the "feed" phase, X, and the "solvent" phase, Y, respectively; equilibrium between phases is given by the linear relation $c_x^* = q + mc_y$, with c representing concentration; E is a dispersion coefficient; F is the superficial velocity of the phase; z is the length variable;

^{*}Present address: University of Tokyo, Tokyo, Japan

1. Terukatsu Miyauchi, Longitudinal Dispersion in Solvent-Extraction Columns: Mathematical Theory, UCRL-3911, Aug. 1957.
2. Alice K. McMullen, Terukatsu Miyauchi, and Theodore Vermeulen, Longitudinal Dispersion in Solvent-Extraction Columns: Numerical Tables, UCRL-3911 (Suppl.), Jan. 1958.

k_{ox} is the over-all mass-transfer coefficient relative to phase X; and a is the interfacial area per unit volume.

Rearrangement of the equations into dimensionless form gives

$$\begin{aligned} d^2X/dZ^2 - P_x B dX/dZ - N_{ox} P_x B (X - Y) &= 0, \\ d^2Y/dZ^2 - P_y B dY/dZ - \Lambda N_{ox} P_y B (X - Y) &= 0, \end{aligned} \quad (2)$$

where the generalized concentration variables are

$$\begin{aligned} X &= \frac{c_x - (q + mc_y^0)}{c_x^0 - (q + mc_y^0)} \\ \text{and} \\ Y &= \frac{m(c_y - c_y^0)}{c_x^0 - (q + mc_y^0)}. \end{aligned} \quad (3)$$

Also, $Z = x/L$, where L is total length of the equipment, measured in the direction of flow; $PB = FL/E$; $N_{ox} = k_{ox} aL/F_x$; and $\Lambda = mF_x/F_y$. Superscript 0 denotes the inlet-end exterior condition.

For the heat-transfer case, temperatures t_x and t_y replace concentrations c_x and c_y as variables in Eq. (1); $q = 0$; $m = 1$; and $\Lambda = F_x(C_p)_x/F_y(C_p)_y$, where C_p represents volumetric heat capacity. With these changes, the dimensionless "concentrations" become

$$X = \frac{t_x - t_y^0}{t_x^0 - t_y^0}; \quad Y = \frac{t_y - t_y^0}{t_x^0 - t_y^0}. \quad (4)$$

The boundary conditions for cocurrent flow are

$$\begin{aligned} \text{at } Z = 0, \quad -dX/dZ &= P_x B(1 - X_0), \text{ and } dY/dZ = P_y B Y_0, \\ \text{at } Z = 1, \quad dX/dZ &= 0, \text{ and } dY/dZ = 0. \end{aligned}$$

These dimensionless equations may be solved as follows in the same manner as for countercurrent operation; that is, by eliminating Y between them to obtain a single linear differential equation of fourth order. The final solutions thus obtained are

$$\left\{ \begin{aligned} X &= \sum_{i=1}^4 A_i e^{\lambda_i Z} = \sum_{i=1}^4 A_i \exp(\lambda_i Z), \\ Y &= \sum_{i=1}^4 a_i A_i e^{\lambda_i Z} = \sum_{i=1}^4 a_i A_i \exp(\lambda_i Z), \end{aligned} \right\} \quad (5)$$

where

$$a_j = 1 + \frac{\lambda_j}{N_{ox}} - \frac{\lambda_j^2}{N_{ox} P_x B}, \text{ for } j = 1, 2, 3, \text{ and } 4$$

$$\begin{cases} \lambda_1 = 0; \\ \lambda_2 = 1a/3 + 2\sqrt{p} \cos(u/3), \\ \lambda_3 = 1a/3 + 2\sqrt{p} \cos(u/3 + 2\pi/3), \\ \lambda_4 = 1a/3 + 2\sqrt{p} \cos(u/3 + 4\pi/3); \end{cases}$$

$$\cos u = q/p^{3/2} \quad (\pi > u > 0),$$

$$\begin{cases} p = (a/3)^2 + \beta/3, \\ q = (a/3)^3 + a\beta/6 - \gamma/2; \end{cases}$$

$$\begin{cases} a = P_x B + P_y B, \\ \beta = N_{ox} P_x B - P_x B P_y B + \Lambda N_{ox} P_y B, \\ \gamma = (1 + \Lambda) N_{ox} P_x B P_y B. \end{cases}$$

By contrast to countercurrent flow, $\Lambda = 1$ involves no singularity in γ . Further parameters are

$$A_j = D_{Pj}/D_P, \quad \text{for } j = 1, 2, 3, \text{ and } 4,$$

with

$$D_P = D_{PI} - \begin{vmatrix} (1 - \frac{\lambda_2}{P_x B}) & (1 - \frac{\lambda_3}{P_x B}) & (1 - \frac{\lambda_4}{P_x B}) \\ \lambda_2 a_2 \exp(\lambda_2) & \lambda_3 a_3 \exp(\lambda_3) & \lambda_4 a_4 \exp(\lambda_4) \\ \lambda_2 \exp(\lambda_2) & \lambda_3 \exp(\lambda_3) & \lambda_4 \exp(\lambda_4) \end{vmatrix}$$

$$D_{PI} = + \begin{vmatrix} \lambda_2 a_2 \exp(\lambda_2) & \lambda_3 a_3 \exp(\lambda_3) & \lambda_4 a_4 \exp(\lambda_4) \\ \lambda_2 \exp(\lambda_2) & \lambda_3 \exp(\lambda_3) & \lambda_4 \exp(\lambda_4) \\ (1 - \frac{\lambda_2}{P_y B}) \cdot a_2 & (1 - \frac{\lambda_3}{P_y B}) \cdot a_3 & (1 - \frac{\lambda_4}{P_y B}) \cdot a_4 \end{vmatrix}$$

$$D_{P2} = - \begin{vmatrix} \lambda_3 a_3 \exp(\lambda_3) & \lambda_4 a_4 \exp(\lambda_4) \\ \lambda_3 \exp(\lambda_3) & \lambda_4 \exp(\lambda_4) \end{vmatrix}$$

$$D_{P3} = + \begin{vmatrix} \lambda_2 a_2 \exp(\lambda_2) & \lambda_4 a_4 \exp(\lambda_4) \\ \lambda_2 \exp(\lambda_2) & \lambda_4 \exp(\lambda_4) \end{vmatrix}$$

$$D_{P4} = - \begin{vmatrix} \lambda_2 a_2 \exp(\lambda_2) & \lambda_3 a_3 \exp(\lambda_3) \\ \lambda_2 \exp(\lambda_2) & \lambda_3 \exp(\lambda_3) \end{vmatrix}$$

Limiting Behavior at High Mass-Transfer Rate

As can easily be seen, both phases approach equilibrium at the entrance end as N_{ox} increases, and finally reach equilibrium there at the limiting case of $N_{ox} \rightarrow \infty$. The extent of extraction for this limiting case is therefore given by the following equation, irrespective of the magnitude of the Péclet group:

$$X = Y \frac{C_{x1} - m C_y^0}{1 - m C_y^0} = \frac{m (C_{y1} - C_y^0)}{1 - m C_y^0} = \frac{\Lambda}{1+\Lambda}. \quad (6)$$

The concentration of each phase is constant, and is equal to its outlet concentration.

COMPUTATION

The sequence of operations required to evaluate Eq. (5) is shown in Fig. 1. In programming this for the IBM 701 computer, the Symbolic Assembly program was used, with the following routines from the Computer Center Library:

```
000018  ← Read decimal data      library tape
000412  ← Square root
DUAL    ← Floating point interpretive routine
- - -   ← Absolute binary loader
        Cos and tan-1 functions as before2
DF-P05  Decimal-punch routine for fourteen five-digit decimal integers,
        with sign.
```

Output cards from the 701 were run through the 514 reproducing punch to shift columns; then through the 650 to convert the parameter ratios to independent values of the individual parameters.

The following arrangement of variables is used to present the numerical results of the foregoing computations, in the appended table:

MU - 19530

Fig. 1. Sequence of computer operations for evaluating concentration profiles.

Λ	0.0625 (x2) 2
N_{ox}	1 (x2) 16
$P_x B$	Computed as a ratio to $N_{ox} = 0.125, 0.5, 1, 2, 8$
$P_y B$	Computed as a ratio to $P_x B = 0.25, 1, 4$
Z	0.00, 0.05, 0.15, 0.50, 0.85, 0.95, 1.00

Calculations were not made for Λ values above 2, because of the symmetry between such values and those for $\Lambda < 0.5$. Because of the somewhat arbitrary designation of phases X and Y, the generalized concentrations for $\Lambda > 1$ (designated $\Lambda^\dagger$) can be calculated from values at $\Lambda < 1$ by use of the following phase-inversion relations:

$$\begin{aligned}\Lambda^\dagger &= 1/\Lambda; N_{ox}^\dagger = \Lambda N_{ox}; \\ P_y^\dagger B &= P_x B; P_x^\dagger B = P_y B; \\ X &= 1 - Y^\dagger; Y = 1 - X^\dagger.\end{aligned}\tag{7}$$

For cocurrent flow the variable Z remains unchanged.

Typical profiles as plotted from the tables are given in Fig. 2. The phase-inversion relations are seen to apply in the following way. We note that, for $P_x B = P_y B$, the two phases approach equilibrium symmetrically; that is,

$$(Y) P_x B = P_y B = \Lambda(1 - X).\tag{8}$$

Then, also,

$$\begin{aligned}(Y^\dagger) P_x^\dagger B &= P_y^\dagger B = 1 - X = Y/\Lambda, \\ (X^\dagger) P_x^\dagger B &= P_y^\dagger B = 1 - Y = 1 - \Lambda + \Lambda X\end{aligned}\tag{9}$$

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Computation of the tables was performed in the University of California's Computing Center. Final print-out of the tables was made by Roger Cason. The work reported was performed under the auspices of the United States Atomic Energy Commission.

MU-19312

Fig. 2. Typical concentration profiles in cocurrent flow, for $\Lambda = 1/4$.

PX.B PY.B .00-X .05 .15 .50 .85 .95 1.00 .00-Y .05 .15 .50 .85 .95 1.00

$\Lambda = 0.0625$

N = 1

0.125	0.031	.5388	.5360	.5308	.5171	.5104	.5098	.5097	.0289	.0289	.0290	.0292	.0293	.0293	.0293
0.125	0.125	.5386	.5358	.5306	.5169	.5102	.5096	.5095	.0276	.0278	.0281	.0289	.0293	.0294	.0294
0.125	0.500	.5383	.5355	.5303	.5166	.5099	.5093	.5092	.0240	.0246	.0257	.0287	.0303	.0304	.0304
0.500	0.125	.6009	.5912	.5731	.5245	.4999	.4976	.4974	.0289	.0291	.0294	.0302	.0306	.0307	.0307
0.500	0.500	.6004	.5906	.5725	.5240	.4994	.4972	.4969	.0249	.0255	.0266	.0296	.0312	.0313	.0313
0.500	2.000	.5984	.5886	.5705	.5219	.4974	.4951	.4949	.0141	.0155	.0182	.0261	.0309	.0314	.0314
1.000	0.250	.6639	.6474	.6168	.5331	.4888	.4845	.4839	.0282	.0286	.0292	.0308	.0316	.0317	.0317
1.000	1.000	.6627	.6462	.6155	.5318	.4876	.4833	.4828	.0209	.0219	.0238	.0290	.0317	.0320	.0320
1.000	4.000	.6605	.6439	.6130	.5292	.4851	.4809	.4803	.0089	.0106	.0140	.0243	.0314	.0323	.0324
2.000	0.500	.7475	.7228	.6766	.5472	.4735	.4657	.4647	.0267	.0274	.0286	.0316	.0331	.0332	.0332
2.000	2.000	.7459	.7211	.6746	.5451	.4716	.4638	.4628	.0158	.0174	.0203	.0284	.0329	.0334	.0335
2.000	8.000	.7440	.7190	.6722	.5423	.4690	.4613	.4603	.0052	.0073	.0112	.0231	.0320	.0334	.0337
8.000	2.000	.9011	.8625	.7904	.5855	.4459	.4248	.4214	.0178	.0196	.0228	.0312	.0356	.0361	.0361
8.000	8.000	.9001	.8611	.7884	.5824	.4431	.4221	.4188	.0062	.0086	.0132	.0260	.0348	.0361	.0363
8.000	32.000	.8997	.8605	.7875	.5810	.4416	.4207	.4173	.0017	.0043	.0093	.0233	.0335	.0358	.0364

$\Lambda = 0.0625$

N = 2

0.250	0.062	.4160	.4089	.3958	.3615	.3448	.3433	.3431	.0383	.0384	.0386	.0391	.0394	.0394	.0394
0.250	0.250	.4160	.4089	.3959	.3616	.3449	.3434	.3433	.0362	.0367	.0375	.0396	.0407	.0407	.0408
0.250	1.000	.4138	.4067	.3936	.3594	.3428	.3413	.3412	.0265	.0278	.0303	.0370	.0407	.0410	.0411
1.000	0.250	.5386	.5162	.4752	.3686	.3152	.3102	.3095	.0386	.0391	.0399	.0420	.0429	.0430	.0430
2.000	0.500	.6369	.6018	.5381	.3745	.2903	.2818	.2806	.0366	.0375	.0391	.0428	.0445	.0446	.0447
2.000	8.000	.6302	.5945	.5300	.3664	.2837	.2754	.2743	.0083	.0116	.0175	.0333	.0435	.0451	.0453
4.000	1.000	.7423	.6926	.6039	.3817	.2644	.2510	.2491	.0329	.0345	.0373	.0438	.0466	.0468	.0468
4.000	4.000	.7391	.6889	.5994	.3769	.2609	.2477	.2459	.0163	.0194	.0250	.0389	.0461	.0470	.0471
4.000	16.000	.7368	.6862	.5961	.3731	.2578	.2448	.2430	.0052	.0092	.0163	.0342	.0449	.0469	.0473
16.000	4.000	.9012	.8258	.6946	.3885	.2303	.2055	.2007	.0187	.0223	.0285	.0428	.0492	.0498	.0499
16.000	16.000	.9001	.8238	.6915	.3842	.2271	.2027	.1980	.0062	.0110	.0192	.0384	.0483	.0498	.0501
16.000	64.000	.8997	.8231	.6903	.3826	.2258	.2015	.1969	.0017	.0068	.0159	.0368	.0475	.0495	.0501

PX.B	PY.B	.00-X	.05	.15	.50	.85	.95	1.00	.00-Y	.05	.15	.50	.85	.95	1.00
$\Lambda = 0.0625$									$N = 1$						
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8.000	32.000	.8997	.8605	.7875	.5810	.4416	.4207	.4173	.0017	.0043	.0093	.0233	.0335	.0358	.0364

$\Lambda = 0.0625$									$N = 2$						
0.250	0.062	.4160	.4089	.3958	.3615	.3448	.3433	.3431	.0383	.0384	.0386	.0391	.0394	.0394	.0394
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0.250	1.000	.4138	.4067	.3936	.3594	.3428	.3413	.3412	.0265	.0278	.0303	.0370	.0407	.0410	.0411
1.000	0.250	.5386	.5162	.4752	.3686	.3152	.3102	.3095	.0386	.0391	.0399	.0420	.0429	.0430	.0430
2.000	0.500	.6369	.6018	.5381	.3745	.2903	.2818	.2806	.0366	.0375	.0391	.0428	.0445	.0446	.0447
2.000	8.000	.6302	.5945	.5300	.3664	.2837	.2754	.2743	.0083	.0116	.0175	.0333	.0435	.0451	.0453
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16.000	64.000	.8997	.8231	.6903	.3826	.2258	.2015	.1969	.0017	.0068	.0159	.0368	.0475	.0495	.0501

PX.B	PY.B	.00-X	.05	.15	.50	.85	.95	1.00	.00-Y	.05	.15	.50	.85	.95	1.00
$\Lambda = 0.0625$									$N = 4$						
0.500	0.125	.3504	.3347	.3064	.2360	.2032	.2003	.1999	.0471	.0474	.0479	.0491	.0496	.0497	.0497
0.500	0.500	.3486	.3328	.3046	.2344	.2019	.1990	.1987	.0406	.0416	.0434	.0478	.0498	.0500	.0500
2.000	0.500	.5250	.4799	.4024	.2296	.1559	.1489	.1480	.0448	.0459	.0477	.0515	.0530	.0531	.0531
2.000	8.000	.5151	.4691	.3908	.2198	.1494	.1429	.1421	.0124	.0171	.0251	.0432	.0522	.0534	.0536
4.000	1.000	.6355	.5670	.4534	.2217	.1315	.1226	.1213	.0412	.0431	.0463	.0525	.0546	.0548	.0548
4.000	16.000	.6268	.5568	.4418	.2121	.1260	.1177	.1166	.0083	.0145	.0247	.0452	.0537	.0549	.0552
8.000	2.000	.7428	.6472	.4943	.2106	.1129	.1026	.1010	.0351	.0384	.0436	.0530	.0559	.0561	.0561
8.000	8.000	.7389	.6421	.4878	.2053	.1104	.1006	.0990	.0163	.0223	.0320	.0496	.0555	.0562	.0562
8.000	32.000	.7366	.6390	.4840	.2021	.1087	.0992	.0977	.0052	.0129	.0251	.0475	.0550	.0561	.0564
32.000	8.000	.9012	.7572	.5387	.1880	.0935	.0829	.0806	.0187	.0256	.0360	.0527	.0570	.0574	.0574
32.000	32.000	.9001	.7545	.5346	.1847	.0921	.0819	.0796	.0062	.0153	.0290	.0509	.0567	.0573	.0575
$\Lambda = 0.0625$									$N = 8$						
1.000	0.250	.3355	.3042	.2519	.1441	.1039	.1005	.1001	.0518	.0524	.0534	.0554	.0561	.0562	.0562
1.000	4.000	.3240	.2922	.2398	.1350	.0978	.0948	.0944	.0224	.0266	.0336	.0481	.0542	.0549	.0549
4.000	1.000	.5254	.4395	.3122	.1197	.0743	.0709	.0704	.0470	.0491	.0522	.0569	.0580	.0580	.0580
4.000	16.000	.5142	.4267	.2990	.1128	.0720	.0690	.0686	.0123	.0213	.0343	.0533	.0576	.0581	.0582
8.000	2.000	.6359	.5071	.3294	.1050	.0668	.0642	.0638	.0421	.0458	.0509	.0574	.0584	.0585	.0585
8.000	8.000	.6305	.5003	.3219	.1013	.0653	.0629	.0626	.0227	.0307	.0417	.0553	.0575	.0577	.0577
8.000	32.000	.6267	.4954	.3169	.0998	.0655	.0633	.0630	.0083	.0199	.0358	.0551	.0582	.0585	.0585
16.000	4.000	.7428	.5652	.3363	.0926	.0629	.0611	.0609	.0353	.0414	.0492	.0576	.0586	.0586	.0586
16.000	16.000	.7389	.5590	.3294	.0903	.0625	.0609	.0606	.0163	.0275	.0419	.0568	.0585	.0586	.0587
16.000	64.000	.7366	.5555	.3255	.0891	.0622	.0608	.0605	.0052	.0195	.0377	.0564	.0585	.0586	.0587
64.000	16.000	.9012	.6377	.3322	.0786	.0602	.0595	.0593	.0187	.0313	.0458	.0579	.0587	.0588	.0588

11

PX.B	PY.B	.00-X	.05	.15	.50	.85	.95	1.00	.00-Y	.05	.15	.50	.85	.95	1.00
$\Lambda = 0.0625$									$N = 16$						
2.000	0.500	.3355	.2764	.1934	.0838	.0639	.0627	.0625	.0531	.0543	.0560	.0581	.0585	.0585	.0585
2.000	8.000	.3235	.2638	.1817	.0793	.0626	.0617	.0616	.0228	.0309	.0420	.0559	.0583	.0585	.0585
8.000	2.000	.5255	.3696	.1966	.0668	.0592	.0590	.0590	.0472	.0510	.0553	.0586	.0587	.0587	.0587
8.000	8.000	.5199	.3629	.1910	.0660	.0593	.0591	.0590	.0300	.0398	.0506	.0584	.0588	.0588	.0588
8.000	32.000	.5142	.3561	.1854	.0652	.0591	.0589	.0589	.0123	.0285	.0459	.0581	.0587	.0588	.0588
16.000	4.000	.6359	.4072	.1857	.0625	.0589	.0588	.0588	.0421	.0487	.0551	.0587	.0588	.0588	.0588
16.000	16.000	.6307	.4001	.1804	.0623	.0591	.0590	.0590	.0231	.0376	.0514	.0588	.0590	.0590	.0590
16.000	64.000	.6267	.3945	.1761	.0617	.0589	.0588	.0588	.0083	.0289	.0483	.0585	.0588	.0588	.0588
32.000	8.000	.7428	.4337	.1714	.0605	.0588	.0588	.0588	.0353	.0459	.0549	.0587	.0588	.0588	.0588
32.000	32.000	.7389	.4267	.1665	.0602	.0588	.0588	.0588	.0163	.0358	.0520	.0587	.0588	.0588	.0588

$\Lambda = 0.125$									$N = 1$						
0.125	0.031	.5517	.5489	.5439	.5305	.5240	.5234	.5234	.0557	.0558	.0559	.0563	.0565	.0565	.0565
0.125	0.125	.5518	.5491	.5441	.5307	.5242	.5237	.5236	.0544	.0547	.0554	.0570	.0578	.0578	.0578
0.125	0.500	.5510	.5482	.5432	.5299	.5234	.5228	.5227	.0468	.0480	.0501	.0560	.0590	.0593	.0593
0.500	0.125	.6127	.6032	.5856	.5385	.5147	.5125	.5122	.0564	.0567	.0574	.0590	.0598	.0598	.0599
0.500	0.500	.6116	.6021	.5845	.5374	.5137	.5115	.5112	.0484	.0495	.0517	.0576	.0606	.0608	.0609
0.500	2.000	.6079	.5983	.5806	.5335	.5099	.5077	.5074	.0278	.0305	.0357	.0511	.0604	.0614	.0615
1.000	0.250	.6739	.6580	.6283	.5472	.5043	.5002	.4996	.0554	.0561	.0573	.0605	.0620	.0622	.0622
1.000	1.000	.6716	.6556	.6257	.5446	.5019	.4978	.4973	.0409	.0429	.0466	.0567	.0620	.0625	.0626
1.000	4.000	.6673	.6510	.6209	.5396	.4972	.4931	.4926	.0176	.0210	.0276	.0477	.0614	.0631	.0634
2.000	0.500	.7548	.7309	.6860	.5608	.4896	.4820	.4810	.0520	.0532	.0555	.0614	.0642	.0645	.0645
2.000	2.000	.7517	.7275	.6822	.5567	.4860	.4785	.4775	.0310	.0340	.0397	.0554	.0642	.0651	.0653
2.000	8.000	.7481	.7235	.6777	.5515	.4811	.4737	.4727	.0105	.0146	.0224	.0455	.0627	.0654	.0659
8.000	2.000	.9031	.8654	.7950	.5965	.4623	.4421	.4389	.0348	.0381	.0444	.0607	.0692	.0700	.0701
8.000	8.000	.9012	.8626	.7911	.5905	.4569	.4370	.4338	.0122	.0170	.0258	.0507	.0673	.0698	.0702
8.000	32.000	.9004	.8616	.7895	.5880	.4544	.4346	.4314	.0033	.0087	.0185	.0461	.0656	.0699	.0711

PX.B	PY.B	.00-X	.05	.15	.50	.85	.95	1.00	.00-Y	.05	.15	.50	.85	.95	1.00
$\Lambda = 0.125$									$N = 2$						
0.250	0.062	.4385	.4316	.4191	.3861	.3700	.3686	.3684	.0746	.0748	.0752	.0763	.0768	.0768	.0768
0.250	0.250	.4381	.4312	.4186	.3858	.3698	.3684	.3682	.0698	.0707	.0723	.0764	.0783	.0785	.0785
0.250	1.000	.4339	.4270	.4144	.3816	.3659	.3645	.3643	.0514	.0540	.0587	.0716	.0786	.0793	.0793
1.000	0.250	.5567	.5352	.4959	.3938	.3427	.3379	.3372	.0741	.0750	.0766	.0806	.0824	.0826	.0826
2.000	0.500	.6510	.6172	.5562	.3997	.3196	.3114	.3103	.0706	.0723	.0753	.0825	.0857	.0859	.0860
2.000	8.000	.6385	.6036	.5410	.3846	.3074	.2997	.2987	.0166	.0230	.0346	.0651	.0843	.0872	.0876
4.000	1.000	.7515	.7037	.6184	.4063	.2952	.2826	.2808	.0633	.0663	.0716	.0840	.0893	.0897	.0898
4.000	4.000	.7450	.6960	.6091	.3960	.2868	.2745	.2728	.0306	.0365	.0469	.0726	.0858	.0874	.0876
4.000	16.000	.7412	.6916	.6037	.3905	.2832	.2714	.2697	.0103	.0183	.0323	.0669	.0870	.0905	.0912
16.000	4.000	.9033	.8297	.7023	.4096	.2619	.2390	.2346	.0363	.0432	.0552	.0823	.0943	.0955	.0956
16.000	16.000	.9012	.8260	.6963	.4015	.2557	.2336	.2294	.0122	.0215	.0376	.0742	.0922	.0950	.0955
16.000	64.000	.9004	.8246	.6942	.3988	.2539	.2320	.2279	.0033	.0137	.0315	.0718	.0918	.0954	.0965
$\Lambda = 0.125$									$N = 4$						
0.500	0.125	.3805	.3656	.3386	.2717	.2405	.2378	.2374	.0899	.0904	.0914	.0937	.0948	.0948	.0949
0.500	0.500	.3772	.3621	.3352	.2687	.2381	.2354	.2351	.0777	.0796	.0830	.0913	.0951	.0954	.0955
2.000	0.500	.5469	.5038	.4301	.2666	.1973	.1908	.1900	.0854	.0874	.0909	.0981	.1008	.1011	.1011
2.000	8.000	.5287	.4842	.4090	.2493	.1862	.1805	.1797	.0245	.0338	.0496	.0839	.1000	.1021	.1025
4.000	1.000	.6513	.5858	.4777	.2591	.1752	.1669	.1657	.0785	.0822	.0882	.1000	.1039	.1042	.1042
4.000	4.000	.6421	.5752	.4655	.2489	.1691	.1614	.1603	.0439	.0522	.0656	.0923	.1021	.1031	.1032
4.000	16.000	.6352	.5671	.4563	.2419	.1657	.1586	.1576	.0164	.0287	.0487	.0876	.1027	.1048	.1052
8.000	2.000	.7525	.6608	.5148	.2478	.1581	.1487	.1473	.0670	.0733	.0831	.1009	.1061	.1065	.1065
8.000	8.000	.7453	.6512	.5028	.2383	.1537	.1451	.1438	.0317	.0435	.0620	.0950	.1056	.1066	.1068
8.000	32.000	.7410	.6455	.4957	.2328	.1510	.1429	.1417	.0103	.0256	.0495	.0916	.1050	.1068	.1072
32.000	8.000	.9034	.7629	.5524	.2237	.1398	.1307	.1286	.0364	.0496	.0695	.1004	.1082	.1088	.1089
32.000	32.000	.9012	.7580	.5447	.2180	.1374	.1290	.1271	.0123	.0302	.0569	.0977	.1078	.1088	.1091

PX.B	PY.B	.00-X	.05	.15	.50	.85	.95	1.00	.00-Y	.05	.15	.50	.85	.95	1.00
$\Lambda = 0.125$									$N = 8$						
1.000	0.250	.3694	.3397	.2902	.1886	.1510	.1478	.1474	.0981	.0993	.1012	.1050	.1063	.1064	.1065
1.000	4.000	.3484	.3179	.2683	.1722	.1399	.1374	.1370	.0437	.0519	.0653	.0921	.1026	.1037	.1039
4.000	1.000	.5482	.4666	.3461	.1661	.1246	.1215	.1210	.0891	.0931	.0991	.1078	.1097	.1098	.1098
4.000	4.000	.5379	.4548	.3340	.1597	.1221	.1194	.1190	.0573	.0676	.0826	.1043	.1089	.1093	.1093
4.000	16.000	.5279	.4434	.3223	.1544	.1208	.1185	.1182	.0245	.0420	.0672	.1021	.1094	.1100	.1102
8.000	2.000	.6519	.5292	.3609	.1522	.1179	.1156	.1152	.0799	.0870	.0966	.1086	.1104	.1105	.1105
8.000	8.000	.6425	.5171	.3481	.1471	.1166	.1147	.1144	.0446	.0603	.0814	.1065	.1103	.1105	.1106
8.000	32.000	.6351	.5078	.3384	.1434	.1158	.1142	.1139	.0164	.0394	.0700	.1052	.1102	.1106	.1107
16.000	4.000	.7526	.5824	.3654	.1404	.1144	.1130	.1127	.0673	.0789	.0937	.1090	.1108	.1108	.1108
16.000	16.000	.7453	.5711	.3530	.1365	.1136	.1124	.1122	.0317	.0535	.0807	.1077	.1106	.1107	.1107
16.000	64.000	.7410	.5645	.3460	.1346	.1134	.1124	.1122	.0103	.0385	.0735	.1073	.1107	.1109	.1109
64.000	16.000	.9034	.6474	.3569	.1271	.1121	.1116	.1114	.0364	.0605	.0879	.1096	.1110	.1110	.1110
$\Lambda = 0.125$									$N = 16$						
2.000	0.500	.3703	.3143	.2361	.1338	.1155	.1144	.1142	.1005	.1027	.1058	.1099	.1106	.1106	.1106
2.000	2.000	.3625	.3062	.2287	.1316	.1155	.1146	.1145	.0802	.0873	.0971	.1093	.1114	.1115	.1115
2.000	8.000	.3487	.2917	.2154	.1260	.1131	.1124	.1123	.0448	.0605	.0815	.1062	.1099	.1102	.1102
8.000	2.000	.5484	.4004	.2377	.1181	.1115	.1113	.1112	.0894	.0967	.1048	.1107	.1110	.1110	.1110
8.000	8.000	.5382	.3882	.2277	.1167	.1113	.1112	.1111	.0577	.0764	.0964	.1103	.1110	.1110	.1110
8.000	32.000	.5279	.3760	.2181	.1156	.1113	.1112	.1111	.0245	.0560	.0888	.1101	.1110	.1110	.1111
16.000	4.000	.6519	.4343	.2265	.1142	.1111	.1111	.1111	.0800	.0925	.1044	.1109	.1111	.1111	.1111
16.000	16.000	.6425	.4213	.2168	.1134	.1110	.1110	.1110	.0446	.0722	.0978	.1107	.1110	.1110	.1110
16.000	64.000	.6351	.4114	.2097	.1131	.1111	.1111	.1111	.0164	.0568	.0933	.1107	.1111	.1111	.1111
32.000	8.000	.7526	.4573	.2119	.1124	.1111	.1111	.1111	.0673	.0875	.1042	.1110	.1111	.1111	.1111
32.000	32.000	.7454	.4448	.2034	.1121	.1111	.1111	.1111	.0318	.0693	.0995	.1109	.1111	.1111	.1111

PX.B	PY.B	.00-X	.05	.15	.50	.85	.95	1.00	.00-Y	.05	.15	.50	.85	.95	1.00
$\Lambda = 0.25$									$N = 1$						
0.125	0.031	.5774	.5749	.5701	.5575	.5514	.5508	.5508	.1094	.1096	.1099	.1107	.1110	.1111	.1111
0.125	0.125	.5767	.5741	.5694	.5568	.5507	.5501	.5501	.1047	.1053	.1065	.1096	.1112	.1113	.1113
0.125	0.500	.5745	.5719	.5671	.5546	.5485	.5479	.5479	.0892	.0914	.0954	.1065	.1122	.1127	.1128
0.500	0.125	.6346	.6256	.6091	.5647	.5423	.5402	.5399	.1077	.1084	.1096	.1127	.1142	.1143	.1143
0.500	0.500	.6322	.6232	.6066	.5623	.5399	.5379	.5376	.0918	.0941	.0982	.1093	.1149	.1154	.1155
0.500	2.000	.6255	.6164	.5996	.5552	.5332	.5311	.5309	.0535	.0587	.0687	.0977	.1150	.1169	.1172
1.000	0.250	.6922	.6771	.6491	.5728	.5325	.5286	.5281	.1047	.1060	.1083	.1143	.1172	.1174	.1174
1.000	1.000	.6880	.6728	.6445	.5682	.5283	.5244	.5239	.0778	.0816	.0886	.1077	.1176	.1186	.1187
2.000	0.500	.7682	.7456	.7033	.5856	.5190	.5120	.5110	.0984	.1007	.1051	.1162	.1215	.1219	.1220
2.000	2.000	.7625	.7393	.6963	.5782	.5125	.5056	.5047	.0593	.0651	.0758	.1054	.1218	.1235	.1237
2.000	8.000	.7559	.7321	.6881	.5688	.5039	.4972	.4963	.0207	.0288	.0440	.0881	.1200	.1251	.1259
8.000	2.000	.9069	.8707	.8036	.6166	.4925	.4740	.4710	.0661	.0725	.0842	.1148	.1304	.1320	.1322
8.000	8.000	.9033	.8657	.7964	.6063	.4835	.4655	.4626	.0241	.0335	.0508	.0984	.1290	.1336	.1343
8.000	32.000	.9018	.8636	.7934	.6014	.4787	.4608	.4579	.0067	.0172	.0366	.0895	.1256	.1334	.1354
$\Lambda = 0.25$									$N = 2$						
0.250	0.062	.4794	.4731	.4614	.4309	.4160	.4147	.4145	.1406	.1411	.1418	.1439	.1448	.1449	.1449
0.250	0.250	.4776	.4713	.4596	.4292	.4145	.4132	.4130	.1303	.1319	.1348	.1424	.1461	.1464	.1465
0.250	1.000	.4703	.4639	.4521	.4220	.4076	.4064	.4062	.0969	.1016	.1104	.1343	.1470	.1482	.1484
1.000	0.250	.5891	.5692	.5328	.4386	.3917	.3873	.3867	.1376	.1392	.1422	.1496	.1529	.1532	.1532
2.000	0.500	.6759	.6446	.5881	.4444	.3713	.3639	.3629	.1307	.1338	.1394	.1527	.1584	.1589	.1590
2.000	2.000	.6651	.6328	.5751	.4317	.3610	.3540	.3530	.0820	.0899	.1040	.1393	.1567	.1585	.1587
2.000	8.000	.6540	.6207	.5617	.4187	.3511	.3446	.3437	.0326	.0451	.0676	.1245	.1583	.1632	.1640
4.000	1.000	.7679	.7233	.6442	.4499	.3497	.3384	.3368	.1173	.1229	.1327	.1553	.1648	.1656	.1657
4.000	4.000	.7574	.7110	.6294	.4349	.3393	.3287	.3272	.0606	.0722	.0926	.1412	.1651	.1678	.1681
4.000	16.000	.7497	.7019	.6184	.4230	.3302	.3202	.3188	.0204	.0361	.0634	.1280	.1631	.1691	.1702
16.000	4.000	.9073	.8369	.7164	.4476	.3182	.2986	.2949	.0686	.0817	.1039	.1531	.1739	.1759	.1762
16.000	16.000	.9033	.8301	.7058	.4343	.3092	.2909	.2875	.0241	.0424	.0735	.1414	.1726	.1772	.1781
16.000	64.000	.9018	.8275	.7017	.4292	.3054	.2876	.2842	.0067	.0272	.0618	.1368	.1711	.1770	.1789

PX.B	PY.B	.00-X	.05	.15	.50	.85	.95	1.00	.00-Y	.05	.15	.50	.85	.95	1.00
$\Lambda = 0.25$									$N = 4$						
0.500	0.125	.4333	.4196	.3951	.3341	.3059	.3034	.3030	.1648	.1658	.1676	.1719	.1737	.1739	.1739
0.500	0.500	.4274	.4136	.3890	.3289	.3016	.2992	.2989	.1431	.1465	.1527	.1677	.1745	.1751	.1752
2.000	0.500	.5848	.5454	.4782	.3308	.2692	.2635	.2627	.1559	.1596	.1658	.1789	.1837	.1841	.1842
2.000	8.000	.5540	.5121	.4428	.3028	.2519	.2475	.2470	.0480	.0660	.0960	.1577	.1840	.1873	.1878
4.000	1.000	.6787	.6185	.5198	.3239	.2505	.2434	.2424	.1433	.1500	.1609	.1819	.1887	.1892	.1893
4.000	4.000	.6629	.6002	.4989	.3068	.2404	.2342	.2333	.0824	.0977	.1225	.1695	.1859	.1874	.1876
4.000	16.000	.6511	.5865	.4836	.2965	.2365	.2312	.2305	.0324	.0564	.0946	.1644	.1885	.1917	.1923
8.000	2.000	.7696	.6846	.5506	.3124	.2361	.2283	.2271	.1231	.1345	.1523	.1836	.1924	.1931	.1932
8.000	8.000	.7573	.6682	.5305	.2976	.2297	.2232	.2223	.0606	.0829	.1173	.1755	.1925	.1941	.1944
8.000	32.000	.7495	.6579	.5180	.2888	.2257	.2200	.2192	.0204	.0503	.0960	.1709	.1920	.1945	.1952
32.000	8.000	.9073	.7735	.5771	.2869	.2199	.2131	.2116	.0687	.0935	.1300	.1838	.1960	.1969	.1970
32.000	32.000	.9033	.7645	.5637	.2780	.2167	.2109	.2097	.0241	.0588	.1090	.1804	.1958	.1972	.1975
$\Lambda = 0.25$									$N = 8$						
1.000	0.250	.4276	.4007	.3560	.2651	.2319	.2291	.2287	.1778	.1799	.1833	.1902	.1925	.1927	.1927
1.000	4.000	.3962	.3683	.3239	.2437	.2196	.2177	.2175	.0869	.1031	.1288	.1763	.1925	.1941	.1943
4.000	1.000	.5873	.5130	.4043	.2455	.2103	.2077	.2074	.1615	.1688	.1794	.1947	.1979	.1981	.1981
4.000	4.000	.5721	.4958	.3873	.2401	.2116	.2097	.2094	.1096	.1292	.1570	.1948	.2021	.2025	.2026
4.000	16.000	.5533	.4743	.3654	.2280	.2050	.2036	.2034	.0479	.0817	.1285	.1875	.1977	.1985	.1987
8.000	2.000	.6796	.5672	.4152	.2330	.2049	.2031	.2029	.1454	.1582	.1754	.1960	.1990	.1992	.1992
8.000	8.000	.6637	.5469	.3940	.2250	.2029	.2016	.2014	.0837	.1128	.1509	.1930	.1986	.1989	.1989
8.000	32.000	.6511	.5310	.3783	.2204	.2024	.2015	.2013	.0324	.0769	.1337	.1924	.1991	.1995	.1996
16.000	4.000	.7698	.6124	.4161	.2224	.2023	.2012	.2010	.1235	.1446	.1709	.1969	.1996	.1997	.1997
16.000	16.000	.7573	.5933	.3960	.2171	.2014	.2007	.2006	.0606	.1016	.1509	.1957	.1996	.1998	.1998
16.000	64.000	.7495	.5816	.3841	.2143	.2011	.2005	.2005	.0204	.0753	.1398	.1953	.1996	.1998	.1998
64.000	16.000	.9073	.6650	.4010	.2106	.2005	.2002	.2001	.0687	.1137	.1627	.1980	.1999	.1999	.1999

PX.B	PY.B	.00-X	.05	.15	.50	.85	.95	1.00	.00-Y	.05	.15	.50	.85	.95	1.00
$\Lambda = 0.25$									$N = 16$						
2.000	0.500	.4296	.3791	.3089	.2189	.2034	.2024	.2023	.1814	.1854	.1910	.1981	.1993	.1993	.1993
2.000	2.000	.4148	.3636	.2945	.2126	.2004	.1997	.1996	.1444	.1571	.1741	.1943	.1973	.1975	.1975
2.000	8.000	.3957	.3437	.2775	.2089	.2011	.2008	.2007	.0870	.1170	.1552	.1948	.1994	.1997	.1997
8.000	2.000	.5875	.4532	.3080	.2054	.2002	.2001	.2001	.1619	.1751	.1893	.1994	.1999	.1999	.1999
8.000	8.000	.5706	.4332	.2923	.2036	.2002	.2001	.2001	.1073	.1417	.1769	.1991	.2000	.2000	.2000
8.000	32.000	.5534	.4131	.2775	.2022	.2000	.1999	.1999	.0479	.1082	.1665	.1989	.1999	.1999	.1999
16.000	4.000	.6796	.4811	.2966	.2022	.2000	.2000	.2000	.1455	.1680	.1890	.1997	.1999	.1999	.1999
16.000	16.000	.6638	.4598	.2815	.2015	.2001	.2001	.2001	.0841	.1351	.1797	.1998	.2001	.2001	.2001
16.000	64.000	.6511	.4429	.2705	.2009	.2000	.2000	.2000	.0324	.1097	.1738	.1996	.1999	.2000	.2000
32.000	8.000	.7698	.4985	.2819	.2008	.2000	.2000	.2000	.1235	.1599	.1890	.1998	.1999	.1999	.1999
32.000	32.000	.7573	.4776	.2689	.2005	.2000	.2000	.2000	.0606	.1305	.1827	.1998	.1999	.1999	.1999
$\Lambda = 0.5$									$N = 1$						
0.125	0.031	.6193	.6170	.6127	.6014	.5959	.5954	.5953	.1967	.1970	.1975	.1990	.1997	.1997	.1998
0.125	0.125	.6185	.6162	.6119	.6006	.5951	.5946	.5946	.1893	.1905	.1926	.1982	.2010	.2012	.2012
0.125	0.500	.6147	.6124	.6081	.5968	.5914	.5909	.5909	.1618	.1658	.1731	.1930	.2032	.2041	.2042
0.500	0.125	.6713	.6633	.6484	.6086	.5885	.5867	.5865	.1939	.1951	.1973	.2029	.2055	.2058	.2058
0.500	0.500	.6674	.6593	.6443	.6046	.5848	.5829	.5827	.1661	.1702	.1777	.1975	.2074	.2083	.2084
0.500	2.000	.6566	.6482	.6329	.5933	.5740	.5723	.5721	.0996	.1094	.1277	.1798	.2101	.2134	.2138
1.000	0.250	.7232	.7096	.6845	.6163	.5804	.5770	.5765	.1886	.1909	.1951	.2058	.2109	.2113	.2114
1.000	1.000	.7162	.7024	.6769	.6087	.5736	.5702	.5698	.1417	.1486	.1614	.1954	.2130	.2147	.2149
2.000	0.500	.7909	.7704	.7324	.6276	.5687	.5625	.5617	.1768	.1810	.1888	.2086	.2179	.2188	.2189
2.000	2.000	.7814	.7601	.7209	.6156	.5585	.5525	.5517	.1093	.1199	.1395	.1921	.2207	.2237	.2241
2.000	8.000	.7703	.7480	.7073	.6005	.5450	.5394	.5387	.0402	.0559	.0850	.1660	.2209	.2293	.2306
8.000	2.000	.9135	.8799	.8183	.6512	.5441	.5283	.5257	.1204	.1321	.1532	.2072	.2341	.2367	.2371
8.000	8.000	.9073	.8714	.8062	.6343	.5301	.5152	.5128	.0462	.0641	.0967	.1824	.2345	.2419	.2431
8.000	32.000	.9045	.8676	.8007	.6263	.5226	.5081	.5057	.0133	.0340	.0715	.1693	.2310	.2437	.2470

PX.B	PY.B	.00-X	.05	.15	.50	.85	.95	1.00	.00-Y	.05	.15	.50	.85	.95	1.00
$\Lambda = 0.5$									$N = 2$						
0.250	0.062	.5450	.5394	.5293	.5027	.4897	.4886	.4884	.2466	.2473	.2487	.2522	.2538	.2540	.2540
0.250	0.250	.5419	.5364	.5262	.4998	.4871	.4860	.4858	.2287	.2315	.2365	.2497	.2561	.2566	.2567
0.250	1.000	.5308	.5252	.5149	.4890	.4770	.4759	.4758	.1733	.1817	.1972	.2385	.2597	.2617	.2620
1.000	0.250	.6411	.6238	.5921	.5108	.4706	.4668	.4663	.2396	.2425	.2477	.2604	.2661	.2666	.2666
1.000	4.000	.6096	.5908	.5577	.4793	.4446	.4415	.4411	.0942	.1123	.1449	.2278	.2733	.2786	.2794
2.000	0.500	.7160	.6886	.6395	.5161	.4544	.4482	.4473	.2276	.2331	.2427	.2654	.2752	.2760	.2761
2.000	2.000	.7019	.6733	.6229	.5024	.4458	.4403	.4395	.1532	.1679	.1938	.2555	.2842	.2870	.2874
2.000	8.000	.6817	.6514	.5986	.4783	.4262	.4214	.4208	.0629	.0869	.1289	.2284	.2811	.2884	.2896
4.000	1.000	.7943	.7550	.6857	.5199	.4370	.4277	.4264	.2046	.2143	.2313	.2695	.2852	.2865	.2867
4.000	4.000	.7775	.7351	.6621	.4968	.4213	.4133	.4121	.1102	.1312	.1673	.2493	.2867	.2908	.2913
4.000	16.000	.7652	.7207	.6451	.4803	.4103	.4033	.4024	.0399	.0701	.1216	.2347	.2887	.2971	.2988
16.000	4.000	.9139	.8490	.7402	.5105	.4095	.3948	.3921	.1239	.1472	.1864	.2683	.3005	.3035	.3039
16.000	16.000	.9073	.8377	.7228	.4908	.3972	.3847	.3823	.0462	.0809	.1382	.2540	.3007	.3070	.3082
16.000	64.000	.9045	.8330	.7158	.4833	.3926	.3808	.3786	.0133	.0534	.1190	.2493	.3004	.3082	.3106
$\Lambda = 0.5$									$N = 4$						
0.500	0.125	.5155	.5039	.4829	.4313	.4076	.4055	.4052	.2816	.2833	.2863	.2935	.2967	.2970	.2970
0.500	0.500	.5066	.4948	.4738	.4238	.4016	.3997	.3995	.2466	.2525	.2630	.2880	.2990	.3000	.3001
2.000	0.500	.6435	.6098	.5527	.4301	.3803	.3757	.3751	.2654	.2716	.2821	.3038	.3116	.3122	.3123
2.000	2.000	.6240	.5888	.5308	.4151	.3731	.3694	.3689	.1901	.2079	.2373	.2957	.3169	.3187	.3190
2.000	8.000	.5985	.5612	.5018	.3933	.3597	.3570	.3567	.0918	.1259	.1804	.2813	.3170	.3210	.3216
4.000	1.000	.7213	.6694	.5852	.4239	.3665	.3610	.3603	.2444	.2558	.2741	.3083	.3189	.3197	.3198
4.000	4.000	.6988	.6432	.5561	.4033	.3569	.3528	.3523	.1500	.1776	.2210	.2971	.3203	.3223	.3226
4.000	16.000	.6795	.6210	.5320	.3880	.3503	.3474	.3470	.0626	.1083	.1779	.2909	.3223	.3258	.3264
8.000	2.000	.7966	.7220	.6069	.4127	.3558	.3502	.3493	.2119	.2313	.2612	.3111	.3242	.3251	.3253
8.000	8.000	.7777	.6971	.5772	.3934	.3485	.3446	.3441	.1110	.1513	.2113	.3031	.3256	.3275	.3278
8.000	32.000	.7651	.6807	.5581	.3823	.3445	.3416	.3411	.0399	.0972	.1805	.3000	.3261	.3288	.3294
32.000	8.000	.9139	.7914	.6185	.3876	.3435	.3396	.3388	.1240	.1681	.2305	.3137	.3293	.3304	.3306
32.000	32.000	.9073	.7766	.5978	.3766	.3404	.3376	.3370	.0463	.1116	.2010	.3116	.3297	.3311	.3314

PX.B	PY.B	.00-X	.05	.15	.50	.85	.95	1.00	.00-Y	.05	.15	.50	.85	.95	1.00
$\Lambda = 0.5$									$N = 8$						
1.000	0.250	.5163	.4936	.4562	.3814	.3548	.3526	.3523	.2992	.3027	.3084	.3197	.3234	.3237	.3237
1.000	4.000	.4733	.4493	.4129	.3549	.3407	.3398	.3396	.1605	.1898	.2343	.3063	.3258	.3274	.3276
4.000	1.000	.6470	.5837	.4929	.3658	.3398	.3379	.3377	.2722	.2844	.3019	.3261	.3308	.3310	.3311
4.000	4.000	.6227	.5562	.4656	.3544	.3366	.3356	.3354	.1883	.2215	.2667	.3222	.3311	.3316	.3317
4.000	16.000	.5980	.5286	.4397	.3460	.3350	.3345	.3344	.0917	.1550	.2362	.3217	.3320	.3326	.3327
8.000	2.000	.7224	.6258	.4985	.3556	.3362	.3350	.3348	.2467	.2682	.2965	.3282	.3323	.3325	.3325
8.000	8.000	.6990	.5964	.4695	.3469	.3346	.3341	.3340	.1504	.2017	.2651	.3264	.3326	.3328	.3329
8.000	32.000	.6795	.5724	.4473	.3418	.3339	.3337	.3336	.0626	.1463	.2441	.3266	.3328	.3331	.3331
16.000	4.000	.7968	.6597	.4951	.3472	.3344	.3339	.3338	.2122	.2480	.2910	.3296	.3329	.3330	.3330
16.000	16.000	.7777	.6312	.4671	.3413	.3337	.3334	.3334	.1110	.1843	.2663	.3291	.3330	.3331	.3331
16.000	64.000	.7651	.6127	.4503	.3389	.3336	.3334	.3334	.0399	.1434	.2538	.3295	.3331	.3332	.3332
64.000	16.000	.9139	.6948	.4734	.3384	.3335	.3334	.3333	.1240	.2030	.2828	.3315	.3332	.3333	.3333

$\Lambda = 0.5$									$N = 16$						
2.000	0.500	.5191	.4767	.4187	.3470	.3354	.3348	.3347	.3036	.3103	.3195	.3307	.3324	.3325	.3325
2.000	2.000	.5002	.4570	.4013	.3420	.3348	.3344	.3344	.2503	.2719	.2998	.3295	.3331	.3333	.3333
2.000	8.000	.4735	.4296	.3787	.3363	.3333	.3332	.3332	.1611	.2148	.2772	.3290	.3328	.3329	.3329
8.000	2.000	.6472	.5335	.4148	.3368	.3334	.3333	.3333	.2726	.2946	.3175	.3326	.3332	.3333	.3333
8.000	8.000	.6228	.5052	.3939	.3348	.3333	.3333	.3333	.1885	.2473	.3030	.3325	.3332	.3333	.3333
8.000	32.000	.5980	.4775	.3761	.3339	.3333	.3333	.3333	.0917	.2017	.2942	.3327	.3333	.3333	.3333
16.000	4.000	.7224	.5532	.4035	.3346	.3333	.3333	.3333	.2468	.2844	.3177	.3330	.3333	.3333	.3333
16.000	16.000	.6990	.5226	.3840	.3338	.3333	.3332	.3332	.1504	.2386	.3079	.3330	.3332	.3332	.3332
16.000	64.000	.6795	.4984	.3709	.3335	.3333	.3333	.3333	.0626	.2042	.3039	.3331	.3333	.3333	.3333
32.000	8.000	.7968	.5631	.3898	.3337	.3333	.3333	.3333	.2122	.2733	.3185	.3332	.3333	.3333	.3333
32.000	32.000	.7777	.5330	.3736	.3334	.3333	.3333	.3333	.1111	.2334	.3131	.3332	.3333	.3333	.3333

PX.B	PY.B	.00-X	.05	.15	.50	.85	.95	1.00	.00-Y	.05	.15	.50	.85	.95	1.00
$\Lambda = 1$									$N = 1$						
0.125	0.031	.6835	.6815	.6780	.6686	.6640	.6636	.6635	.3304	.3309	.3318	.3342	.3354	.3355	.3355
0.125	0.125	.6818	.6799	.6763	.6669	.6624	.6620	.6619	.3173	.3192	.3228	.3322	.3367	.3371	.3371
0.125	0.500	.6762	.6742	.6706	.6613	.6569	.6565	.6565	.2731	.2798	.2921	.3250	.3416	.3431	.3433
0.500	0.125	.7266	.7199	.7075	.6746	.6581	.6565	.6563	.3234	.3254	.3290	.3382	.3426	.3430	.3431
0.500	0.500	.7207	.7139	.7014	.6688	.6527	.6512	.6510	.2791	.2859	.2984	.3311	.3472	.3487	.3489
0.500	2.000	.7058	.6987	.6859	.6536	.6386	.6372	.6371	.1753	.1923	.2239	.3098	.3572	.3621	.3628
1.000	0.250	.7693	.7580	.7372	.6810	.6517	.6489	.6485	.3135	.3173	.3243	.3419	.3502	.3509	.3510
1.000	4.000	.7415	.7290	.7066	.6512	.6254	.6231	.6228	.1199	.1432	.1858	.3005	.3679	.3759	.3771
2.000	0.500	.8246	.8075	.7759	.6901	.6427	.6377	.6370	.2940	.3011	.3140	.3462	.3612	.3626	.3627
2.000	8.000	.7949	.7752	.7399	.6534	.6123	.6084	.6079	.0763	.1058	.1589	.2960	.3783	.3901	.3920
8.000	2.000	.9236	.8941	.8410	.7039	.6216	.6098	.6079	.2050	.2247	.2600	.3465	.3876	.3915	.3920
8.000	8.000	.9142	.8812	.8230	.6810	.6044	.5941	.5925	.0857	.1187	.1769	.3189	.3955	.4058	.4074
8.000	32.000	.9095	.8749	.8142	.6694	.5948	.5852	.5837	.0261	.0662	.1364	.3041	.3949	.4118	.4160
$\Lambda = 1$									$N = 2$						
0.250	0.062	.6369	.6325	.6244	.6033	.5930	.5921	.5920	.3950	.3962	.3984	.4040	.4067	.4069	.4069
0.250	0.250	.6324	.6280	.6198	.5991	.5892	.5884	.5883	.3673	.3718	.3799	.4007	.4105	.4114	.4115
0.250	1.000	.6186	.6140	.6059	.5860	.5773	.5765	.5764	.2866	.3005	.3256	.3892	.4202	.4231	.4235
1.000	0.250	.7133	.6994	.6743	.6107	.5797	.5768	.5764	.3812	.3858	.3940	.4138	.4226	.4234	.4235
1.000	4.000	.6733	.6578	.6313	.5737	.5512	.5493	.5491	.1688	.2010	.2565	.3836	.4434	.4499	.4508
2.000	0.500	.7713	.7494	.7103	.6149	.5686	.5639	.5633	.3617	.3704	.3855	.4204	.4350	.4363	.4364
2.000	2.000	.7500	.7263	.6854	.5936	.5542	.5504	.5499	.2487	.2724	.3131	.4045	.4439	.4476	.4481
2.000	8.000	.7266	.7009	.6581	.5708	.5390	.5363	.5360	.1169	.1610	.2346	.3885	.4546	.4626	.4639
4.000	1.000	.8311	.7989	.7434	.6163	.5565	.5500	.5491	.3265	.3421	.3686	.4262	.4487	.4506	.4508
4.000	4.000	.8108	.7752	.7161	.5952	.5478	.5431	.5424	.1956	.2323	.2934	.4183	.4669	.4717	.4724
4.000	16.000	.7915	.7526	.6898	.5704	.5298	.5262	.5257	.0758	.1324	.2239	.3988	.4639	.4726	.4742
16.000	4.000	.9241	.8675	.7760	.6011	.5360	.5273	.5257	.2084	.2473	.3101	.4296	.4701	.4737	.4742
16.000	16.000	.9142	.8509	.7519	.5790	.5249	.5187	.5176	.0857	.1490	.2480	.4209	.4750	.4812	.4823
16.000	64.000	.9095	.8432	.7410	.5699	.5204	.5152	.5143	.0261	.1029	.2211	.4190	.4765	.4835	.4856

PX.B	PY.B	.00-X	.05	.15	.50	.85	.95	1.00	.00-Y	.05	.15	.50	.85	.95	1.00
$\Lambda = 1$									$N = 4$						
0.500	0.125	.6242	.6152	.5991	.5598	.5420	.5404	.5402	.4361	.4387	.4433	.4543	.4591	.4595	.4595
0.500	2.000	.5905	.5809	.5650	.5333	.5224	.5215	.5214	.2794	.3057	.3495	.4401	.4749	.4781	.4785
2.000	0.500	.7205	.6942	.6503	.5598	.5250	.5218	.5214	.4094	.4190	.4349	.4666	.4775	.4784	.4785
2.000	2.000	.6931	.6647	.6196	.5377	.5121	.5100	.5098	.3013	.3292	.3735	.4540	.4793	.4814	.4816
2.000	8.000	.6668	.6366	.5917	.5233	.5077	.5067	.5066	.1667	.2271	.3172	.4554	.4898	.4929	.4933
4.000	1.000	.7776	.7364	.6714	.5543	.5166	.5131	.5126	.3787	.3962	.4237	.4723	.4861	.4871	.4872
4.000	4.000	.7496	.7042	.6365	.5329	.5079	.5060	.5057	.2492	.2944	.3617	.4649	.4897	.4916	.4919
4.000	16.000	.7254	.6767	.6086	.5198	.5042	.5032	.5031	.1166	.1995	.3153	.4664	.4941	.4964	.4968
8.000	2.000	.8332	.7728	.6827	.5445	.5101	.5070	.5066	.3331	.3633	.4082	.4766	.4922	.4932	.4933
8.000	8.000	.8090	.7413	.6472	.5261	.5048	.5033	.5031	.1910	.2587	.3529	.4740	.4953	.4968	.4970
8.000	32.000	.7914	.7189	.6234	.5166	.5023	.5015	.5014	.0758	.1814	.3202	.4757	.4967	.4982	.4985
32.000	8.000	.9241	.8185	.6797	.5242	.5032	.5017	.5014	.2085	.2811	.3765	.4833	.4976	.4984	.4985
32.000	32.000	.9142	.7973	.6532	.5150	.5014	.5007	.5006	.0857	.2026	.3467	.4849	.4985	.4992	.4993
$\Lambda = 1$									$N = 8$						
1.000	0.250	.6295	.6122	.5840	.5297	.5113	.5098	.5096	.4546	.4599	.4684	.4847	.4899	.4902	.4903
1.000	1.000	.6076	.5896	.5619	.5155	.5029	.5020	.5019	.3860	.4037	.4310	.4767	.4892	.4901	.4902
1.000	4.000	.5845	.5661	.5405	.5076	.5021	.5018	.5018	.2762	.3251	.3933	.4813	.4970	.4980	.4981
4.000	1.000	.7237	.6748	.6066	.5186	.5029	.5019	.5018	.4154	.4338	.4594	.4923	.4978	.4981	.4981
4.000	4.000	.6958	.6435	.5774	.5098	.5023	.5019	.5019	.3058	.3583	.4248	.4927	.5003	.5006	.5007
4.000	16.000	.6666	.6117	.5502	.5030	.5002	.5001	.5001	.1666	.2765	.3996	.4938	.4996	.4998	.4998
8.000	2.000	.7784	.7024	.6071	.5114	.5011	.5005	.5005	.3804	.4130	.4539	.4949	.4992	.4994	.4994
8.000	8.000	.7499	.6674	.5751	.5044	.5000	.4999	.4999	.2498	.3322	.4245	.4952	.4995	.4996	.4996
8.000	32.000	.7254	.6385	.5523	.5017	.5000	.5000	.5000	.1166	.2644	.4110	.4970	.4999	.4999	.4999
16.000	4.000	.8333	.7234	.6003	.5061	.5003	.5001	.5001	.3333	.3882	.4498	.4969	.4997	.4998	.4998
16.000	16.000	.8090	.6884	.5701	.5021	.5000	.5000	.5000	.1909	.3115	.4298	.4977	.4999	.4999	.4999
16.000	64.000	.7914	.6644	.5523	.5009	.5000	.5000	.5000	.0758	.2607	.4238	.4986	.4999	.4999	.5000
64.000	16.000	.9241	.7392	.5761	.5013	.5000	.5000	.5000	.2085	.3355	.4476	.4990	.4999	.5000	.5000

PX.B	PY.B	.00-X	.05	.15	.50	.85	.95	1.00	.00-Y	.05	.15	.50	.85	.95	1.00
$\Lambda = 1$									$N = 16$						
2.000	0.500	.6322	.6000	.5573	.5079	.5010	.5006	.5005	.4585	.4685	.4818	.4971	.4992	.4993	.4993
2.000	2.000	.6099	.5770	.5377	.5026	.4996	.4995	.4995	.3890	.4218	.4610	.4961	.4990	.4991	.4991
2.000	8.000	.5842	.5514	.5191	.5006	.5000	.5000	.5000	.2760	.3632	.4489	.4983	.4999	.4999	.4999
8.000	2.000	.7239	.6367	.5509	.5016	.5000	.5000	.5000	.4157	.4485	.4807	.4993	.4999	.4999	.4999
8.000	8.000	.6952	.6045	.5299	.5003	.5000	.5000	.5000	.3048	.3954	.4700	.4996	.5000	.5000	.5000
8.000	32.000	.6666	.5748	.5151	.5000	.5000	.5000	.5000	.1666	.3502	.4697	.4998	.5000	.5000	.5000
16.000	4.000	.7784	.6472	.5412	.5004	.5000	.4999	.4999	.3804	.4367	.4823	.4997	.4999	.4999	.4999
16.000	16.000	.7500	.6123	.5227	.5001	.5000	.5000	.5000	.2500	.3877	.4773	.4999	.5000	.5000	.5000
32.000	8.000	.8333	.6497	.5302	.5001	.5000	.5000	.5000	.3333	.4251	.4848	.4999	.5000	.5000	.5000
32.000	32.000	.8090	.6149	.5159	.5000	.4999	.4999	.4999	.1909	.3850	.4840	.4999	.4999	.4999	.4999

$\Lambda = 2$									$N = 1$						
0.125	0.031	.7626	.7611	.7585	.7514	.7480	.7477	.7477	.4953	.4960	.4974	.5010	.5028	.5029	.5029
0.125	0.125	.7608	.7594	.7567	.7497	.7464	.7461	.7460	.4773	.4803	.4856	.4995	.5062	.5068	.5069
0.125	0.500	.7546	.7531	.7504	.7436	.7404	.7402	.7401	.4165	.4266	.4452	.4934	.5170	.5191	.5194
0.500	0.125	.7951	.7901	.7808	.7564	.7443	.7431	.7430	.4841	.4870	.4924	.5061	.5126	.5132	.5133
0.500	0.500	.7882	.7831	.7738	.7499	.7385	.7374	.7373	.4233	.4336	.4523	.5000	.5228	.5249	.5252
0.500	2.000	.7722	.7667	.7571	.7344	.7246	.7238	.7237	.2838	.3112	.3603	.4837	.5454	.5516	.5524
1.000	0.250	.8266	.8181	.8026	.7613	.7401	.7381	.7378	.4690	.4746	.4849	.5108	.5228	.5239	.5240
1.000	4.000	.7953	.7855	.7686	.7304	.7147	.7134	.7132	.2055	.2449	.3141	.4800	.5629	.5721	.5735
2.000	2.000	.8509	.8366	.8114	.7512	.7229	.7201	.7197	.3022	.3312	.3823	.5043	.5613	.5668	.5676
2.000	8.000	.8317	.8158	.7885	.7294	.7059	.7038	.7036	.1378	.1901	.2800	.4818	.5784	.5907	.5927
8.000	2.000	.9370	.9130	.8710	.7715	.7188	.7115	.7104	.3182	.3486	.4013	.5217	.5737	.5785	.5791
8.000	8.000	.9249	.8965	.8488	.7474	.7036	.6983	.6975	.1500	.2067	.3020	.5049	.5925	.6029	.6046
8.000	32.000	.9181	.8874	.8368	.7351	.6955	.6912	.6906	.0501	.1254	.2495	.4990	.5995	.6148	.6185

PX.B	PY.B	.00-X	.05	.15	.50	.85	.95	1.00	.00-Y	.05	.15	.50	.85	.95	1.00
$\Lambda = 2$									$N = 2$						
0.250	0.062	.7411	.7379	.7322	.7173	.7101	.7095	.7094	.5633	.5650	.5682	.5761	.5798	.5801	.5801
0.250	0.250	.7362	.7331	.7273	.7130	.7064	.7058	.7057	.5272	.5336	.5451	.5738	.5870	.5881	.5883
0.250	1.000	.7232	.7199	.7142	.7013	.6961	.6957	.6956	.4278	.4482	.4841	.5679	.6048	.6081	.6085
1.000	0.250	.7945	.7846	.7669	.7231	.7024	.7005	.7002	.5413	.5478	.5593	.5864	.5982	.5992	.5993
1.000	4.000	.7555	.7441	.7258	.6916	.6810	.6802	.6801	.2786	.3305	.4147	.5760	.6334	.6388	.6396
2.000	2.000	.8120	.7944	.7654	.7075	.6865	.6847	.6844	.3781	.4135	.4719	.5882	.6303	.6340	.6345
2.000	8.000	.7881	.7686	.7387	.6888	.6757	.6748	.6746	.2033	.2779	.3930	.5872	.6441	.6497	.6506
4.000	4.000	.8494	.8216	.7780	.7017	.6784	.6764	.6761	.3005	.3560	.4429	.5954	.6418	.6459	.6464
4.000	16.000	.8301	.7994	.7543	.6873	.6724	.6714	.6712	.1374	.2367	.3829	.6005	.6516	.6565	.6574
16.000	4.000	.9373	.8916	.8220	.7090	.6776	.6741	.6735	.3204	.3789	.4679	.6119	.6496	.6525	.6529
16.000	16.000	.9249	.8713	.7952	.6918	.6715	.6698	.6696	.1500	.2571	.4093	.6160	.6565	.6599	.6605
16.000	64.000	.9181	.8604	.7818	.6852	.6697	.6686	.6684	.0501	.1915	.3844	.6210	.6593	.6623	.6631

$\Lambda = 2$									$N = 4$						
0.500	0.125	.7399	.7337	.7227	.6965	.6849	.6839	.6838	.6008	.6044	.6107	.6254	.6315	.6320	.6321
0.500	0.500	.7147	.7080	.6965	.6720	.6625	.6618	.6617	.4229	.4618	.5220	.6247	.6538	.6561	.6564
0.500	2.000	.7106	.7040	.6937	.6766	.6721	.6718	.6717	.5229	.5353	.5564	.6021	.6202	.6217	.6219
2.000	2.000	.7780	.7579	.7279	.6822	.6714	.6706	.6705	.4449	.4852	.5452	.6370	.6586	.6602	.6603
2.000	8.000	.7532	.7317	.7034	.6717	.6676	.6674	.6674	.2775	.3741	.5014	.6443	.6637	.6649	.6651
4.000	1.000	.8375	.8079	.7629	.6901	.6704	.6688	.6685	.5235	.5474	.5836	.6413	.6554	.6564	.6565
4.000	4.000	.8113	.7781	.7328	.6772	.6683	.6678	.6677	.3770	.4433	.5339	.6450	.6628	.6638	.6640
4.000	16.000	.7877	.7519	.7089	.6703	.6670	.6669	.6669	.2031	.3402	.5048	.6527	.6655	.6660	.6661
8.000	2.000	.8742	.8295	.7667	.6843	.6688	.6676	.6675	.4707	.5126	.5712	.6481	.6616	.6624	.6625
8.000	8.000	.8495	.7982	.7347	.6734	.6673	.6670	.6670	.3009	.4034	.5304	.6530	.6652	.6658	.6659
8.000	32.000	.8301	.7745	.7136	.6692	.6668	.6667	.6667	.1374	.3174	.5145	.6583	.6662	.6664	.6665
32.000	8.000	.9373	.8536	.7558	.6733	.6671	.6668	.6668	.3204	.4275	.5526	.6581	.6660	.6662	.6663
32.000	32.000	.9249	.8289	.7306	.6691	.6667	.6667	.6666	.1500	.3421	.5386	.6617	.6664	.6665	.6666

PX.B	PY.B	.00-X	.05	.15	.50	.85	.95	1.00	.00-Y	.05	.15	.50	.85	.95	1.00
$\Lambda = 2$									$N = 8$						
1.000	0.250	.7358	.7236	.7041	.6686	.6575	.6567	.6566	.6011	.6081	.6191	.6390	.6450	.6454	.6455
1.000	1.000	.7313	.7193	.7019	.6775	.6726	.6723	.6723	.5481	.5726	.6080	.6577	.6677	.6683	.6684
1.000	4.000	.7089	.6966	.6817	.6680	.6668	.6668	.6668	.4218	.4931	.5795	.6589	.6660	.6663	.6663
4.000	1.000	.8037	.7695	.7245	.6736	.6667	.6663	.6662	.5661	.5908	.6232	.6598	.6646	.6648	.6649
4.000	4.000	.7777	.7411	.7000	.6686	.6667	.6666	.6666	.4443	.5176	.5996	.6625	.6663	.6664	.6664
4.000	16.000	.7531	.7155	.6822	.6669	.6666	.6666	.6666	.2775	.4467	.5964	.6653	.6666	.6666	.6666
8.000	2.000	.8385	.7847	.7222	.6703	.6665	.6664	.6664	.5259	.5698	.6207	.6630	.6660	.6661	.6661
8.000	8.000	.8114	.7526	.6969	.6674	.6666	.6666	.6666	.3771	.4947	.6060	.6650	.6666	.6666	.6666
8.000	32.000	.7877	.7266	.6814	.6667	.6666	.6666	.6666	.2031	.4368	.6101	.6662	.6666	.6666	.6666
16.000	4.000	.8745	.7949	.7155	.6685	.6669	.6669	.6669	.4717	.5466	.6211	.6653	.6668	.6668	.6668
16.000	16.000	.8495	.7613	.6920	.6669	.6666	.6666	.6666	.3009	.4773	.6158	.6661	.6666	.6666	.6666
16.000	64.000	.8301	.7378	.6801	.6667	.6666	.6666	.6666	.1374	.4361	.6229	.6665	.6666	.6666	.6666
64.000	16.000	.9373	.7957	.6960	.6668	.6666	.6666	.6666	.3204	.5015	.6291	.6664	.6666	.6666	.6666
$\Lambda = 2$									$N = 16$						
2.000	0.500	.7470	.7253	.6977	.6695	.6664	.6662	.6662	.6166	.6299	.6466	.6638	.6657	.6657	.6658
2.000	2.000	.7281	.7062	.6830	.6674	.6667	.6667	.6667	.5438	.5877	.6341	.6652	.6666	.6667	.6667
2.000	8.000	.7089	.6878	.6720	.6667	.6666	.6666	.6666	.4218	.5437	.6356	.6664	.6666	.6666	.6666
8.000	2.000	.8041	.7444	.6914	.6669	.6665	.6665	.6665	.5669	.6101	.6484	.6661	.6665	.6665	.6665
8.000	8.000	.7777	.7165	.6767	.6667	.6666	.6666	.6666	.4444	.5668	.6465	.6665	.6666	.6666	.6666
8.000	32.000	.7531	.6942	.6694	.6666	.6666	.6666	.6666	.2775	.5424	.6539	.6666	.6666	.6666	.6666
16.000	4.000	.8387	.7480	.6848	.6668	.6667	.6667	.6667	.5263	.6004	.6519	.6666	.6667	.6667	.6667
16.000	16.000	.8114	.7177	.6730	.6666	.6666	.6666	.6666	.3771	.5645	.6539	.6666	.6666	.6666	.6666
32.000	8.000	.8744	.7456	.6780	.6666	.6666	.6666	.6666	.4715	.5924	.6559	.6666	.6666	.6666	.6666
32.000	32.000	.8495	.7156	.6701	.6666	.6666	.6666	.6666	.3009	.5686	.6596	.6666	.6666	.6666	.6666

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