APPENDIX 3

Tables

Table 1 Binomial Probabilities

Tabulated values are $P(Y \le a) = \sum_{y=0}^{a} p(y)$. (Computations are rounded at third decimal place.)

(a) n = 5

| | | | | | | | p | | | | | | | |
|---|-------|-------|-------|-------|------|------|------|------|------|------|------|------|------|---|
| а | 0.01 | 0.05 | 0.10 | 0.20 | 0.30 | 0.40 | 0.50 | 0.60 | 0.70 | 0.80 | 0.90 | 0.95 | 0.99 | а |
| 0 | .951 | .774 | .590 | .328 | .168 | .078 | .031 | .010 | .002 | .000 | .000 | .000 | .000 | 0 |
| 1 | .999 | .977 | .919 | .737 | .528 | .337 | .188 | .087 | .031 | .007 | .000 | .000 | .000 | 1 |
| 2 | 1.000 | .999 | .991 | .942 | .837 | .683 | .500 | .317 | .163 | .058 | .009 | .001 | .000 | 2 |
| 3 | 1.000 | 1.000 | 1.000 | .993 | .969 | .913 | .812 | .663 | .472 | .263 | .081 | .023 | .001 | 3 |
| 4 | 1.000 | 1.000 | 1.000 | 1.000 | .998 | .990 | .969 | .922 | .832 | .672 | .410 | .226 | .049 | 4 |

(b) n = 10

| | | | | | | | p | | | | | | | |
|---|-------|-------|-------|-------|-------|-------|------|------|------|------|------|------|------|---|
| a | 0.01 | 0.05 | 0.10 | 0.20 | 0.30 | 0.40 | 0.50 | 0.60 | 0.70 | 0.80 | 0.90 | 0.95 | 0.99 | a |
| 0 | .904 | .599 | .349 | .107 | .028 | .006 | .001 | .000 | .000 | .000 | .000 | .000 | .000 | 0 |
| 1 | .996 | .914 | .736 | .376 | .149 | .046 | .011 | .002 | .000 | .000 | .000 | .000 | .000 | 1 |
| 2 | 1.000 | .988 | .930 | .678 | .383 | .167 | .055 | .012 | .002 | .000 | .000 | .000 | .000 | 2 |
| 3 | 1.000 | .999 | .987 | .879 | .650 | .382 | .172 | .055 | .011 | .001 | .000 | .000 | .000 | 3 |
| 4 | 1.000 | 1.000 | .998 | .967 | .850 | .633 | .377 | .166 | .047 | .006 | .000 | .000 | .000 | 4 |
| 5 | 1.000 | 1.000 | 1.000 | .994 | .953 | .834 | .623 | .367 | .150 | .033 | .002 | .000 | .000 | 5 |
| 6 | 1.000 | 1.000 | 1.000 | .999 | .989 | .945 | .828 | .618 | .350 | .121 | .013 | .001 | .000 | 6 |
| 7 | 1.000 | 1.000 | 1.000 | 1.000 | .998 | .988 | .945 | .833 | .617 | .322 | .070 | .012 | .000 | 7 |
| 8 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | .998 | .989 | .954 | .851 | .624 | .264 | .086 | .004 | 8 |
| 9 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | .999 | .994 | .972 | .893 | .651 | .401 | .096 | 9 |

Table 1 (Continued)

(c) n = 15

| | | | | | | | p | | | | | | | |
|----|-------|-------|-------|-------|-------|-------|-------|-------|------|------|------|------|------|----|
| а | 0.01 | 0.05 | 0.10 | 0.20 | 0.30 | 0.40 | 0.50 | 0.60 | 0.70 | 0.80 | 0.90 | 0.95 | 0.99 | a |
| 0 | .860 | .463 | .206 | .035 | .005 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | 0 |
| 1 | .990 | .829 | .549 | .167 | .035 | .005 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | 1 |
| 2 | 1.000 | .964 | .816 | .398 | .127 | .027 | .004 | .000 | .000 | .000 | .000 | .000 | .000 | 2 |
| 3 | 1.000 | .995 | .944 | .648 | .297 | .091 | .018 | .002 | .000 | .000 | .000 | .000 | .000 | 3 |
| 4 | 1.000 | .999 | .987 | .836 | .515 | .217 | .059 | .009 | .001 | .000 | .000 | .000 | .000 | 4 |
| 5 | 1.000 | 1.000 | .998 | .939 | .722 | .403 | .151 | .034 | .004 | .000 | .000 | .000 | .000 | 5 |
| 6 | 1.000 | 1.000 | 1.000 | .982 | .869 | .610 | .304 | .095 | .015 | .001 | .000 | .000 | .000 | 6 |
| 7 | 1.000 | 1.000 | 1.000 | .996 | .950 | .787 | .500 | .213 | .050 | .004 | .000 | .000 | .000 | 7 |
| 8 | 1.000 | 1.000 | 1.000 | .999 | .985 | .905 | .696 | .390 | .131 | .018 | .000 | .000 | .000 | 8 |
| 9 | 1.000 | 1.000 | 1.000 | 1.000 | .996 | .966 | .849 | .597 | .278 | .061 | .002 | .000 | .000 | 9 |
| 10 | 1.000 | 1.000 | 1.000 | 1.000 | .999 | .991 | .941 | .783 | .485 | .164 | .013 | .001 | .000 | 10 |
| 11 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | .998 | .982 | .909 | .703 | .352 | .056 | .005 | .000 | 11 |
| 12 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | .996 | .973 | .873 | .602 | .184 | .036 | .000 | 12 |
| 13 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | .995 | .965 | .833 | .451 | .171 | .010 | 13 |
| 14 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | .995 | .965 | .794 | .537 | .140 | 14 |

(d) n = 20

| | | | | | | | p | | | | | | | |
|----|-------|-------|-------|-------|-------|-------|-------|-------|------|------|------|------|------|----|
| а | 0.01 | 0.05 | 0.10 | 0.20 | 0.30 | 0.40 | 0.50 | 0.60 | 0.70 | 0.80 | 0.90 | 0.95 | 0.99 | а |
| | | | | | | | | | | | | | | |
| 0 | .818 | .358 | .122 | .012 | .001 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | 0 |
| 1 | .983 | .736 | .392 | .069 | .008 | .001 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | 1 |
| 2 | .999 | .925 | .677 | .206 | .035 | .004 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | 2 |
| 3 | 1.000 | .984 | .867 | .411 | .107 | .016 | .001 | .000 | .000 | .000 | .000 | .000 | .000 | 3 |
| 4 | 1.000 | .997 | .957 | .630 | .238 | .051 | .006 | .000 | .000 | .000 | .000 | .000 | .000 | 4 |
| 5 | 1.000 | 1.000 | .989 | .804 | .416 | .126 | .021 | .002 | .000 | .000 | .000 | .000 | .000 | 5 |
| 6 | 1.000 | 1.000 | .998 | .913 | .608 | .250 | .058 | .006 | .000 | .000 | .000 | .000 | .000 | 6 |
| 7 | 1.000 | 1.000 | 1.000 | .968 | .772 | .416 | .132 | .021 | .001 | .000 | .000 | .000 | .000 | 7 |
| 8 | 1.000 | 1.000 | 1.000 | .990 | .887 | .596 | .252 | .057 | .005 | .000 | .000 | .000 | .000 | 8 |
| 9 | 1.000 | 1.000 | 1.000 | .997 | .952 | .755 | .412 | .128 | .017 | .001 | .000 | .000 | .000 | 9 |
| 10 | 1.000 | 1.000 | 1.000 | .999 | .983 | .872 | .588 | .245 | .048 | .003 | .000 | .000 | .000 | 10 |
| 11 | 1.000 | 1.000 | 1.000 | 1.000 | .995 | .943 | .748 | .404 | .113 | .010 | .000 | .000 | .000 | 11 |
| 12 | 1.000 | 1.000 | 1.000 | 1.000 | .999 | .979 | .868 | .584 | .228 | .032 | .000 | .000 | .000 | 12 |
| 13 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | .994 | .942 | .750 | .392 | .087 | .002 | .000 | .000 | 13 |
| 14 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | .998 | .979 | .874 | .584 | .196 | .011 | .000 | .000 | 14 |
| 15 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | .994 | .949 | .762 | .370 | .043 | .003 | .000 | 15 |
| 16 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | .999 | .984 | .893 | .589 | .133 | .016 | .000 | 16 |
| 17 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | .996 | .965 | .794 | .323 | .075 | .001 | 17 |
| 18 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | .999 | .992 | .931 | .608 | .264 | .017 | 18 |
| 19 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | .999 | .988 | .878 | .642 | .182 | 19 |

Table 1 (Continued)

(e) n = 25

| | | | | | | | р | | | | | | | |
|----|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|------|------|------|----|
| а | 0.01 | 0.05 | 0.10 | 0.20 | 0.30 | 0.40 | 0.50 | 0.60 | 0.70 | 0.80 | 0.90 | 0.95 | 0.99 | а |
| 0 | .778 | .277 | .072 | .004 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | 0 |
| 1 | .974 | .642 | .271 | .027 | .002 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | 1 |
| 2 | .998 | .873 | .537 | .098 | .009 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | 2 |
| 3 | 1.000 | .966 | .764 | .234 | .033 | .002 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | 3 |
| 4 | 1.000 | .993 | .902 | .421 | .090 | .009 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | 4 |
| 5 | 1.000 | .999 | .967 | .617 | .193 | .029 | .002 | .000 | .000 | .000 | .000 | .000 | .000 | 5 |
| 6 | 1.000 | 1.000 | .991 | .780 | .341 | .074 | .007 | .000 | .000 | .000 | .000 | .000 | .000 | 6 |
| 7 | 1.000 | 1.000 | .998 | .891 | .512 | .154 | .022 | .001 | .000 | .000 | .000 | .000 | .000 | 7 |
| 8 | 1.000 | 1.000 | 1.000 | .953 | .677 | .274 | .054 | .004 | .000 | .000 | .000 | .000 | .000 | 8 |
| 9 | 1.000 | 1.000 | 1.000 | .983 | .811 | .425 | .115 | .013 | .000 | .000 | .000 | .000 | .000 | 9 |
| 10 | 1.000 | 1.000 | 1.000 | .994 | .902 | .586 | .212 | .034 | .002 | .000 | .000 | .000 | .000 | 10 |
| 11 | 1.000 | 1.000 | 1.000 | .998 | .956 | .732 | .345 | .078 | .006 | .000 | .000 | .000 | .000 | 11 |
| 12 | 1.000 | 1.000 | 1.000 | 1.000 | .983 | .846 | .500 | .154 | .017 | .000 | .000 | .000 | .000 | 12 |
| 13 | 1.000 | 1.000 | 1.000 | 1.000 | .994 | .922 | .655 | .268 | .044 | .002 | .000 | .000 | .000 | 13 |
| 14 | 1.000 | 1.000 | 1.000 | 1.000 | .998 | .966 | .788 | .414 | .098 | .006 | .000 | .000 | .000 | 14 |
| 15 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | .987 | .885 | .575 | .189 | .017 | .000 | .000 | .000 | 15 |
| 16 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | .996 | .946 | .726 | .323 | .047 | .000 | .000 | .000 | 16 |
| 17 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | .999 | .978 | .846 | .488 | .109 | .002 | .000 | .000 | 17 |
| 18 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | .993 | .926 | .659 | .220 | .009 | .000 | .000 | 18 |
| 19 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | .998 | .971 | .807 | .383 | .033 | .001 | .000 | 19 |
| 20 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | .991 | .910 | .579 | .098 | .007 | .000 | 20 |
| 21 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | .998 | .967 | .766 | .236 | .034 | .000 | 21 |
| 22 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | .991 | .902 | .463 | .127 | .002 | 22 |
| 23 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | .998 | .973 | .729 | .358 | .026 | 23 |
| 24 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | .996 | .928 | .723 | .222 | 24 |

Table 2 Table of e^{-X}

| х | e^{-x} | х | e^{-x} | х | e^{-x} | x | e^{-x} |
|------|----------|------|----------|------|----------|-------|----------|
| 0.00 | 1.000000 | 2.60 | .074274 | 5.10 | .006097 | 7.60 | .000501 |
| 0.10 | .904837 | 2.70 | .067206 | 5.20 | .005517 | 7.70 | .000453 |
| 0.20 | .818731 | 2.80 | .060810 | 5.30 | .004992 | 7.80 | .000410 |
| 0.30 | .740818 | 2.90 | .055023 | 5.40 | .004517 | 7.90 | .000371 |
| 0.40 | .670320 | 3.00 | .049787 | 5.50 | .004087 | 8.00 | .000336 |
| 0.50 | .606531 | 3.10 | .045049 | 5.60 | .003698 | 8.10 | .000304 |
| 0.60 | .548812 | 3.20 | .040762 | 5.70 | .003346 | 8.20 | .000275 |
| 0.70 | .496585 | 3.30 | .036883 | 5.80 | .003028 | 8.30 | .000249 |
| 0.80 | .449329 | 3.40 | .033373 | 5.90 | .002739 | 8.40 | .000225 |
| 0.90 | .406570 | 3.50 | .030197 | 6.00 | .002479 | 8.50 | .000204 |
| 1.00 | .367879 | 3.60 | .027324 | 6.10 | .002243 | 8.60 | .000184 |
| 1.10 | .332871 | 3.70 | .024724 | 6.20 | .002029 | 8.70 | .000167 |
| 1.20 | .301194 | 3.80 | .022371 | 6.30 | .001836 | 8.80 | .000151 |
| 1.30 | .272532 | 3.90 | .020242 | 6.40 | .001661 | 8.90 | .000136 |
| 1.40 | .246597 | 4.00 | .018316 | 6.50 | .001503 | 9.00 | .000123 |
| 1.50 | .223130 | 4.10 | .016573 | 6.60 | .001360 | 9.10 | .000112 |
| 1.60 | .201897 | 4.20 | .014996 | 6.70 | .001231 | 9.20 | .000101 |
| 1.70 | .182684 | 4.30 | .013569 | 6.80 | .001114 | 9.30 | .000091 |
| 1.80 | .165299 | 4.40 | .012277 | 6.90 | .001008 | 9.40 | .000083 |
| 1.90 | .149569 | 4.50 | .011109 | 7.00 | .000912 | 9.50 | .000075 |
| 2.00 | .135335 | 4.60 | .010052 | 7.10 | .000825 | 9.60 | .000068 |
| 2.10 | .122456 | 4.70 | .009095 | 7.20 | .000747 | 9.70 | .000061 |
| 2.20 | .110803 | 4.80 | .008230 | 7.30 | .000676 | 9.80 | .000056 |
| 2.30 | .100259 | 4.90 | .007447 | 7.40 | .000611 | 9.90 | .000050 |
| 2.40 | .090718 | 5.00 | .006738 | 7.50 | .000553 | 10.00 | .000045 |
| 2.50 | .082085 | | | | | | |

Table 3 Poisson Probabilities

| $P(Y \le a)$: | $= \sum_{y=0}^{a} e^{-\lambda} \frac{\lambda^{y}}{y!}$ | |
|----------------|--|--|
| | | |

| | | | | | y=0 | | | | | |
|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---|
| λ^a | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 0.02 | 0.980 | 1.000 | | | | | | | | |
| 0.04 | 0.961 | 0.999 | 1.000 | | | | | | | |
| 0.06 | 0.942 | 0.998 | 1.000 | | | | | | | |
| 0.08 | 0.923 | 0.997 | 1.000 | | | | | | | |
| 0.10 | 0.905 | 0.995 | 1.000 | | | | | | | |
| 0.15 | 0.861 | 0.990 | 0.999 | 1.000 | | | | | | |
| 0.20 | 0.819 | 0.982 | 0.999 | 1.000 | | | | | | |
| 0.25 | 0.779 | 0.974 | 0.998 | 1.000 | | | | | | |
| 0.30 | 0.741 | 0.963 | 0.996 | 1.000 | | | | | | |
| 0.35 | 0.705 | 0.951 | 0.994 | 1.000 | | | | | | |
| 0.40 | 0.670 | 0.938 | 0.992 | 0.999 | 1.000 | | | | | |
| 0.45 | 0.638 | 0.925 | 0.989 | 0.999 | 1.000 | | | | | |
| 0.50 | 0.607 | 0.910 | 0.986 | 0.998 | 1.000 | | | | | |
| 0.55 | 0.577 | 0.894 | 0.982 | 0.988 | 1.000 | | | | | |
| 0.60 | 0.549 | 0.878 | 0.977 | 0.997 | 1.000 | | | | | |
| 0.65 | 0.522 | 0.861 | 0.972 | 0.996 | 0.999 | 1.000 | | | | |
| 0.70 | 0.497 | 0.844 | 0.966 | 0.994 | 0.999 | 1.000 | | | | |
| 0.75 | 0.472 | 0.827 | 0.959 | 0.993 | 0.999 | 1.000 | | | | |
| 0.80 | 0.449 | 0.809 | 0.953 | 0.991 | 0.999 | 1.000 | | | | |
| 0.85 | 0.427 | 0.791 | 0.945 | 0.989 | 0.998 | 1.000 | | | | |
| 0.90 | 0.407 | 0.772 | 0.937 | 0.987 | 0.998 | 1.000 | | | | |
| 0.95 | 0.387 | 0.754 | 0.929 | 0.981 | 0.997 | 1.000 | | | | |
| 1.00 | 0.368 | 0.736 | 0.920 | 0.981 | 0.996 | 0.999 | 1.000 | | | |
| 1.1 | 0.333 | 0.699 | 0.900 | 0.974 | 0.995 | 0.999 | 1.000 | | | |
| 1.2 | 0.301 | 0.663 | 0.879 | 0.966 | 0.992 | 0.998 | 1.000 | | | |
| 1.3 | 0.273 | 0.627 | 0.857 | 0.957 | 0.989 | 0.998 | 1.000 | | | |
| 1.4 | 0.247 | 0.592 | 0.833 | 0.946 | 0.986 | 0.997 | 0.999 | 1.000 | | |
| 1.5 | 0.223 | 0.558 | 0.809 | 0.934 | 0.981 | 0.996 | 0.999 | 1.000 | | |
| 1.6 | 0.202 | 0.525 | 0.783 | 0.921 | 0.976 | 0.994 | 0.999 | 1.000 | | |
| 1.7 | 0.183 | 0.493 | 0.757 | 0.907 | 0.970 | 0.992 | 0.998 | 1.000 | | |
| 1.8 | 0.165 | 0.463 | 0.731 | 0.891 | 0.964 | 0.990 | 0.997 | 0.999 | 1.000 | |
| 1.9 | 0.150 | 0.434 | 0.704 | 0.875 | 0.956 | 0.987 | 0.997 | 0.999 | 1.000 | |
| 2.0 | 0.135 | 0.406 | 0.677 | 0.857 | 0.947 | 0.983 | 0.995 | 0.999 | 1.000 | |
| | | | | | | | | | | |

Table 3 (Continued)

| λ^a | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 2.2 | 0.111 | 0.355 | 0.623 | 0.819 | 0.928 | 0.975 | 0.993 | 0.998 | 1.000 | |
| 2.4 | 0.091 | 0.308 | 0.570 | 0.779 | 0.904 | 0.964 | 0.988 | 0.997 | 0.999 | 1.000 |
| 2.6 | 0.074 | 0.267 | 0.518 | 0.736 | 0.877 | 0.951 | 0.983 | 0.995 | 0.999 | 1.000 |
| 2.8 | 0.061 | 0.231 | 0.469 | 0.692 | 0.848 | 0.935 | 0.976 | 0.992 | 0.998 | 0.999 |
| 3.0 | 0.050 | 0.199 | 0.423 | 0.647 | 0.815 | 0.916 | 0.966 | 0.988 | 0.996 | 0.999 |
| 3.2 | 0.041 | 0.171 | 0.380 | 0.603 | 0.781 | 0.895 | 0.955 | 0.983 | 0.994 | 0.998 |
| 3.4 | 0.033 | 0.147 | 0.340 | 0.558 | 0.744 | 0.871 | 0.942 | 0.977 | 0.992 | 0.997 |
| 3.6 | 0.027 | 0.126 | 0.303 | 0.515 | 0.706 | 0.844 | 0.927 | 0.969 | 0.988 | 0.996 |
| 3.8 | 0.022 | 0.107 | 0.269 | 0.473 | 0.668 | 0.816 | 0.909 | 0.960 | 0.984 | 0.994 |
| 4.0 | 0.018 | 0.092 | 0.238 | 0.433 | 0.629 | 0.785 | 0.889 | 0.949 | 0.979 | 0.992 |
| 4.2 | 0.015 | 0.078 | 0.210 | 0.395 | 0.590 | 0.753 | 0.867 | 0.936 | 0.972 | 0.989 |
| 4.4 | 0.012 | 0.066 | 0.185 | 0.359 | 0.551 | 0.720 | 0.844 | 0.921 | 0.964 | 0.985 |
| 4.6 | 0.010 | 0.056 | 0.163 | 0.326 | 0.513 | 0.686 | 0.818 | 0.905 | 0.955 | 0.980 |
| 4.8 | 0.008 | 0.048 | 0.143 | 0.294 | 0.476 | 0.651 | 0.791 | 0.887 | 0.944 | 0.975 |
| 5.0 | 0.007 | 0.040 | 0.125 | 0.265 | 0.440 | 0.616 | 0.762 | 0.867 | 0.932 | 0.968 |
| 5.2 | 0.006 | 0.034 | 0.109 | 0.238 | 0.406 | 0.581 | 0.732 | 0.845 | 0.918 | 0.960 |
| 5.4 | 0.005 | 0.029 | 0.095 | 0.213 | 0.373 | 0.546 | 0.702 | 0.822 | 0.903 | 0.951 |
| 5.6 | 0.004 | 0.024 | 0.082 | 0.191 | 0.342 | 0.512 | 0.670 | 0.797 | 0.886 | 0.941 |
| 5.8 | 0.003 | 0.021 | 0.072 | 0.170 | 0.313 | 0.478 | 0.638 | 0.771 | 0.867 | 0.929 |
| 6.0 | 0.002 | 0.017 | 0.062 | 0.151 | 0.285 | 0.446 | 0.606 | 0.744 | 0.847 | 0.916 |
| | 10 | 11 | 12 | 13 | 14 | 15 | 16 | _ | | |
| 2.8 | 1.000 | | | | | | | | | |
| 3.0 | 1.000 | | | | | | | | | |
| 3.2 | 1.000 | | | | | | | | | |
| 3.4 | 0.999 | 1.000 | | | | | | | | |
| 3.6 | 0.999 | 1.000 | | | | | | | | |
| 3.8 | 0.998 | 0.999 | 1.000 | | | | | | | |
| 4.0 | 0.997 | 0.999 | 1.000 | | | | | | | |
| 4.2 | 0.996 | 0.999 | 1.000 | 1.005 | | | | | | |
| 4.4 | 0.994 | 0.998 | 0.999 | 1.000 | | | | | | |
| 4.6 | 0.992 | 0.997 | 0.999 | 1.000 | | | | | | |
| 4.8 | 0.990 | 0.996 | 0.999 | 1.000 | 1.000 | | | | | |
| 5.0 | 0.986 | 0.995 | 0.998 | 0.999 | 1.000 | | | | | |
| 5.2 | 0.982 | 0.993 | 0.997 | 0.999 | 1.000 | | | | | |
| 5.4 | 0.977 | 0.990 | 0.996 | 0.999 | 1.000 | | | | | |
| 5.6 | 0.972 | 0.988 | 0.995 | 0.998 | 0.999 | 1.000 | | | | |
| 5.8 | 0.965 | 0.984 | 0.993 | 0.997 | 0.999 | 1.000 | | | | |
| 6.0 | 0.957 | 0.980 | 0.991 | 0.996 | 0.999 | 0.999 | 1.000 | | | |

Table 3 (Continued)

| λ^a | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 6.2 | 0.002 | 0.015 | 0.054 | 0.134 | 0.259 | 0.414 | 0.574 | 0.716 | 0.826 | 0.902 |
| 6.4 | 0.002 | 0.012 | 0.046 | 0.119 | 0.235 | 0.384 | 0.542 | 0.687 | 0.803 | 0.886 |
| 6.6 | 0.001 | 0.010 | 0.040 | 0.105 | 0.213 | 0.355 | 0.511 | 0.658 | 0.780 | 0.869 |
| 6.8 | 0.001 | 0.009 | 0.034 | 0.093 | 0.192 | 0.327 | 0.480 | 0.628 | 0.755 | 0.850 |
| 7.0 | 0.001 | 0.007 | 0.030 | 0.082 | 0.173 | 0.301 | 0.450 | 0.599 | 0.729 | 0.830 |
| 7.2 | 0.001 | 0.006 | 0.025 | 0.072 | 0.156 | 0.276 | 0.420 | 0.569 | 0.703 | 0.810 |
| 7.4 | 0.001 | 0.005 | 0.022 | 0.063 | 0.140 | 0.253 | 0.392 | 0.539 | 0.676 | 0.788 |
| 7.6 | 0.001 | 0.004 | 0.019 | 0.055 | 0.125 | 0.231 | 0.365 | 0.510 | 0.648 | 0.765 |
| 7.8 | 0.000 | 0.004 | 0.016 | 0.048 | 0.112 | 0.210 | 0.338 | 0.481 | 0.620 | 0.741 |
| 8.0 | 0.000 | 0.003 | 0.014 | 0.042 | 0.100 | 0.191 | 0.313 | 0.453 | 0.593 | 0.717 |
| 8.5 | 0.000 | 0.002 | 0.009 | 0.030 | 0.074 | 0.150 | 0.256 | 0.386 | 0.523 | 0.653 |
| 9.0 | 0.000 | 0.001 | 0.006 | 0.021 | 0.055 | 0.116 | 0.207 | 0.324 | 0.456 | 0.587 |
| 9.5 | 0.000 | 0.001 | 0.004 | 0.015 | 0.040 | 0.089 | 0.165 | 0.269 | 0.392 | 0.522 |
| 10.0 | 0.000 | 0.000 | 0.003 | 0.010 | 0.029 | 0.067 | 0.130 | 0.220 | 0.333 | 0.458 |
| | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 |
| 6.2 | 0.949 | 0.975 | 0.989 | 0.995 | 0.998 | 0.999 | 1.000 | | | |
| 6.4 | 0.939 | 0.969 | 0.986 | 0.994 | 0.997 | 0.999 | 1.000 | | | |
| 6.6 | 0.927 | 0.963 | 0.982 | 0.992 | 0.997 | 0.999 | 0.999 | 1.000 | | |
| 6.8 | 0.915 | 0.955 | 0.978 | 0.990 | 0.996 | 0.998 | 0.999 | 1.000 | | |
| 7.0 | 0.901 | 0.947 | 0.973 | 0.987 | 0.994 | 0.998 | 0.999 | 1.000 | | |
| 7.2 | 0.887 | 0.937 | 0.967 | 0.984 | 0.993 | 0.997 | 0.999 | 0.999 | 1.000 | |
| 7.4 | 0.871 | 0.926 | 0.961 | 0.980 | 0.991 | 0.996 | 0.998 | 0.999 | 1.000 | |
| 7.6 | 0.854 | 0.915 | 0.954 | 0.976 | 0.989 | 0.995 | 0.998 | 0.999 | 1.000 | |
| 7.8 | 0.835 | 0.902 | 0.945 | 0.971 | 0.986 | 0.993 | 0.997 | 0.999 | 1.000 | |
| 8.0 | 0.816 | 0.888 | 0.936 | 0.966 | 0.983 | 0.992 | 0.996 | 0.998 | 0.999 | 1.000 |
| 8.5 | 0.763 | 0.849 | 0.909 | 0.949 | 0.973 | 0.986 | 0.993 | 0.997 | 0.999 | 0.999 |
| 9.0 | 0.706 | 0.803 | 0.876 | 0.926 | 0.959 | 0.978 | 0.989 | 0.995 | 0.998 | 0.999 |
| 9.5 | 0.645 | 0.752 | 0.836 | 0.898 | 0.940 | 0.967 | 0.982 | 0.991 | 0.996 | 0.998 |
| 10.0 | 0.583 | 0.697 | 0.792 | 0.864 | 0.917 | 0.951 | 0.973 | 0.986 | 0.993 | 0.997 |
| | 20 | 21 | 22 | | | | | | | |
| 8.5 | 1.000 | | | | | | | | | |
| 9.0 | 1.000 | | | | | | | | | |
| 9.5 | 0.999 | 1.000 | | | | | | | | |
| 10.0 | 0.998 | 0.999 | 1.000 | | | | | | | |

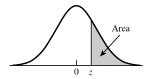
Table 3 (Continued)

| λ^a | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 10.5 | 0.000 | 0.000 | 0.002 | 0.007 | 0.021 | 0.050 | 0.102 | 0.179 | 0.279 | 0.397 |
| 11.0 | 0.000 | 0.000 | 0.001 | 0.005 | 0.015 | 0.038 | 0.079 | 0.143 | 0.232 | 0.341 |
| 11.5 | 0.000 | 0.000 | 0.001 | 0.003 | 0.011 | 0.028 | 0.060 | 0.114 | 0.191 | 0.289 |
| 12.0 | 0.000 | 0.000 | 0.001 | 0.002 | 0.008 | 0.020 | 0.046 | 0.090 | 0.155 | 0.242 |
| 12.5 | 0.000 | 0.000 | 0.000 | 0.002 | 0.005 | 0.015 | 0.035 | 0.070 | 0.125 | 0.201 |
| 13.0 | 0.000 | 0.000 | 0.000 | 0.001 | 0.004 | 0.011 | 0.026 | 0.054 | 0.100 | 0.166 |
| 13.5 | 0.000 | 0.000 | 0.000 | 0.001 | 0.003 | 0.008 | 0.019 | 0.041 | 0.079 | 0.135 |
| 14.0 | 0.000 | 0.000 | 0.000 | 0.000 | 0.002 | 0.006 | 0.014 | 0.032 | 0.062 | 0.109 |
| 14.5 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.004 | 0.010 | 0.024 | 0.048 | 0.088 |
| 15.0 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.003 | 0.008 | 0.018 | 0.037 | 0.070 |
| | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 |
| 10.5 | 0.521 | 0.639 | 0.742 | 0.825 | 0.888 | 0.932 | 0.960 | 0.978 | 0.988 | 0.994 |
| 11.0 | 0.460 | 0.579 | 0.689 | 0.781 | 0.854 | 0.907 | 0.944 | 0.968 | 0.982 | 0.991 |
| 11.5 | 0.402 | 0.520 | 0.633 | 0.733 | 0.815 | 0.878 | 0.924 | 0.954 | 0.974 | 0.986 |
| 12.0 | 0.347 | 0.462 | 0.576 | 0.682 | 0.772 | 0.844 | 0.899 | 0.937 | 0.963 | 0.979 |
| 12.5 | 0.297 | 0.406 | 0.519 | 0.628 | 0.725 | 0.806 | 0.869 | 0.916 | 0.948 | 0.969 |
| 13.0 | 0.252 | 0.353 | 0.463 | 0.573 | 0.675 | 0.764 | 0.835 | 0.890 | 0.930 | 0.957 |
| 13.5 | 0.211 | 0.304 | 0.409 | 0.518 | 0.623 | 0.718 | 0.798 | 0.861 | 0.908 | 0.942 |
| 14.0 | 0.176 | 0.260 | 0.358 | 0.464 | 0.570 | 0.669 | 0.756 | 0.827 | 0.883 | 0.923 |
| 14.5 | 0.145 | 0.220 | 0.311 | 0.413 | 0.518 | 0.619 | 0.711 | 0.790 | 0.853 | 0.901 |
| 15.0 | 0.118 | 0.185 | 0.268 | 0.363 | 0.466 | 0.568 | 0.664 | 0.749 | 0.819 | 0.875 |
| | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 |
| 10.5 | 0.997 | 0.999 | 0.999 | 1.000 | | | | | | |
| 11.0 | 0.995 | 0.998 | 0.999 | 1.000 | | | | | | |
| 11.5 | 0.992 | 0.996 | 0.998 | 0.999 | 1.000 | | | | | |
| 12.0 | 0.988 | 0.994 | 0.997 | 0.999 | 0.999 | 1.000 | | | | |
| 12.5 | 0.983 | 0.991 | 0.995 | 0.998 | 0.999 | 0.999 | 1.000 | | | |
| 13.0 | 0.975 | 0.986 | 0.992 | 0.996 | 0.998 | 0.999 | 1.000 | | | |
| 13.5 | 0.965 | 0.980 | 0.989 | 0.994 | 0.997 | 0.998 | 0.999 | 1.000 | | |
| 14.0 | 0.952 | 0.971 | 0.983 | 0.991 | 0.995 | 0.997 | 0.999 | 0.999 | 1.000 | |
| 14.5 | 0.936 | 0.960 | 0.976 | 0.986 | 0.992 | 0.996 | 0.998 | 0.999 | 0.999 | 1.000 |
| 15.0 | 0.917 | 0.947 | 0.967 | 0.981 | 0.989 | 0.994 | 0.997 | 0.998 | 0.999 | 1.000 |
| | | | | | | | | | | |

Table 3 (Continued)

| $\overline{}$ | | | | | | | | | | |
|--|---|--|--|--|---|--|--|----------------------------------|-------------------------|-------------------------|
| λ^a | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 16 | 0.000 | 0.001 | 0.004 | 0.010 | 0.022 | 0.043 | 0.077 | 0.127 | 0.193 | 0.275 |
| 17 | 0.000 | 0.001 | 0.002 | 0.005 | 0.013 | 0.026 | 0.049 | 0.085 | 0.135 | 0.201 |
| 18 | 0.000 | 0.000 | 0.001 | 0.003 | 0.007 | 0.015 | 0.030 | 0.055 | 0.092 | 0.143 |
| 19 | 0.000 | 0.000 | 0.001 | 0.002 | 0.004 | 0.009 | 0.018 | 0.035 | 0.061 | 0.098 |
| 20 | 0.000 | 0.000 | 0.000 | 0.001 | 0.002 | 0.005 | 0.011 | 0.021 | 0.039 | 0.066 |
| 21 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.003 | 0.006 | 0.013 | 0.025 | 0.043 |
| 22 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.002 | 0.004 | 0.008 | 0.015 | 0.028 |
| 23 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.002 | 0.004 | 0.009 | 0.017 |
| 24 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.003 | 0.005 | 0.011 |
| 25 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.001 | 0.003 | 0.006 |
| | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| 16 | 0.368 | 0.467 | 0.566 | 0.659 | 0.742 | 0.812 | 0.868 | 0.911 | 0.942 | 0.963 |
| 17 | 0.281 | 0.371 | 0.468 | 0.564 | 0.655 | 0.736 | 0.805 | 0.861 | 0.905 | 0.937 |
| 18 | 0.208 | 0.287 | 0.375 | 0.469 | 0.562 | 0.651 | 0.731 | 0.799 | 0.855 | 0.899 |
| 19 | 0.150 | 0.215 | 0.292 | 0.378 | 0.469 | 0.561 | 0.647 | 0.725 | 0.793 | 0.849 |
| 20 | 0.105 | 0.157 | 0.221 | 0.297 | 0.381 | 0.470 | 0.559 | 0.644 | 0.721 | 0.787 |
| 21 | 0.072 | 0.111 | 0.163 | 0.227 | 0.302 | 0.384 | 0.471 | 0.558 | 0.640 | 0.716 |
| 22 | 0.048 | 0.077 | 0.117 | 0.169 | 0.232 | 0.306 | 0.387 | 0.472 | 0.556 | 0.637 |
| 23 | 0.031 | 0.052 | 0.082 | 0.123 | 0.175 | 0.238 | 0.310 | 0.389 | 0.472 | 0.555 |
| 24 | 0.020 | 0.034 | 0.056 | 0.087 | 0.128 | 0.180 | 0.243 | 0.314 | 0.392 | 0.473 |
| 25 | 0.012 | 0.022 | 0.038 | 0.060 | 0.092 | 0.134 | 0.185 | 0.247 | 0.318 | 0.394 |
| | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 |
| 16 | 0.978 | 0.987 | 0.993 | 0.996 | 0.998 | 0.999 | 0.999 | 1.000 | | |
| 17 | 0.959 | 0.975 | 0.985 | 0.991 | 0.995 | 0.997 | 0.999 | 0.999 | 1.000 | |
| 18 | 0.932 | 0.955 | 0.972 | 0.983 | 0.990 | 0.994 | 0.997 | 0.998 | 0.999 | 1.000 |
| 19 | 0.893 | 0.927 | 0.951 | 0.969 | 0.980 | 0.988 | 0.993 | 0.996 | 0.998 | 0.999 |
| 20 | 0.843 | 0.888 | 0.922 | 0.948 | 0.966 | 0.978 | 0.987 | 0.992 | 0.995 | 0.997 |
| 21 | 0.782 | 0.838 | 0.883 | 0.917 | 0.944 | 0.963 | 0.976 | 0.985 | 0.991 | 0.994 |
| 22 | | | | | | | | | | |
| | 0.712 | 0.777 | 0.832 | 0.877 | 0.913 | 0.940 | 0.959 | 0.973 | 0.983 | 0.989 |
| 23 | 0.712 0.635 | 0.708 | 0.832 0.772 | 0.877 0.827 | 0.873 | 0.940 0.908 | | | 0.983 0.971 | 0.989 0.981 |
| 24 | 0.635 0.554 | 0.708 0.632 | 0.772 0.704 | 0.827 0.768 | 0.873 0.823 | 0.940 0.908 0.868 | 0.959 0.936 0.904 | 0.973 0.956 0.932 | 0.971 0.953 | 0.981 0.969 |
| | 0.635 | 0.708 | 0.772 | 0.827 | 0.873 | 0.940 0.908 | 0.959 0.936 | 0.973 0.956 | 0.971 | 0.981 |
| 24 | 0.635 0.554 | 0.708 0.632 | 0.772 0.704 | 0.827 0.768 | 0.873 0.823 | 0.940 0.908 0.868 | 0.959 0.936 0.904 | 0.973 0.956 0.932 | 0.971 0.953 | 0.981 0.969 |
| 24 25 19 | 0.635 0.554 0.473 34 0.999 | 0.708 0.632 0.553 35 1.000 | 0.772 0.704 0.629 | 0.827 0.768 0.700 | 0.873 0.823 0.763 | 0.940 0.908 0.868 0.818 | 0.959 0.936 0.904 0.863 | 0.973 0.956 0.932 0.900 | 0.971 0.953 0.929 | 0.981 0.969 0.950 |
| 24 25 19 20 | 0.635 0.554 0.473 | 0.708 0.632 0.553 | 0.772 0.704 0.629 36 | 0.827 0.768 0.700 | 0.873 0.823 0.763 | 0.940 0.908 0.868 0.818 | 0.959 0.936 0.904 0.863 | 0.973 0.956 0.932 0.900 | 0.971 0.953 0.929 | 0.981 0.969 0.950 |
| 24 25 19 20 21 | 0.635 0.554 0.473 34 0.999 0.999 0.997 | 0.708 0.632 0.553 35 1.000 0.999 0.998 | 0.772 0.704 0.629 36 | 0.827 0.768 0.700 | 0.873 0.823 0.763 | 0.940 0.908 0.868 0.818 | 0.959 0.936 0.904 0.863 | 0.973 0.956 0.932 0.900 | 0.971 0.953 0.929 | 0.981 0.969 0.950 |
| 24 25 19 20 21 22 | 0.635 0.554 0.473 34 0.999 0.999 | 0.708 0.632 0.553 35 1.000 0.999 0.998 0.996 | 0.772 0.704 0.629 36 | 0.827 0.768 0.700 37 | 0.873 0.823 0.763 | 0.940 0.908 0.868 0.818 | 0.959 0.936 0.904 0.863 | 0.973 0.956 0.932 0.900 | 0.971 0.953 0.929 | 0.981 0.969 0.950 |
| 24 25 19 20 21 22 23 | 0.635 0.554 0.473 34 0.999 0.999 0.997 | 0.708 0.632 0.553 35 1.000 0.999 0.998 0.996 0.993 | 0.772 0.704 0.629 36 1.000 0.999 | 0.827 0.768 0.700 37 0.999 0.999 0.997 | 0.873 0.823 0.763 38 | 0.940 0.908 0.868 0.818 | 0.959 0.936 0.904 0.863 | 0.973 0.956 0.932 0.900 | 0.971 0.953 0.929 | 0.981 0.969 0.950 |
| 24 25 19 20 21 22 | 0.635 0.554 0.473 34 0.999 0.999 0.997 0.994 | 0.708 0.632 0.553 35 1.000 0.999 0.998 0.996 | 0.772 0.704 0.629 36 1.000 0.999 0.998 | 0.827 0.768 0.700 37 0.999 0.999 | 0.873 0.823 0.763 38 1.000 0.999 | 0.940 0.908 0.868 0.818 39 | 0.959 0.936 0.904 0.863 40 | 0.973 0.956 0.932 0.900 | 0.971 0.953 0.929 | 0.981 0.969 0.950 |

Table 4 Normal Curve Areas Standard normal probability in right-hand tail (for negative values of *z*, areas are found by symmetry)



| | Second decimal place of z | | | | | | | | | |
|-----|---------------------------|--------|-------|-------|-------|-------|-------|-------|-------|-------|
| z | .00 | .01 | .02 | .03 | .04 | .05 | .06 | .07 | .08 | .09 |
| 0.0 | .5000 | .4960 | .4920 | .4880 | .4840 | .4801 | .4761 | .4721 | .4681 | .4641 |
| 0.1 | .4602 | .4562 | .4522 | .4483 | .4443 | .4404 | .4364 | .4325 | .4286 | .4247 |
| 0.2 | .4207 | .4168 | .4129 | .4090 | .4052 | .4013 | .3974 | .3936 | .3897 | .3859 |
| 0.3 | .3821 | .3783 | .3745 | .3707 | .3669 | .3632 | .3594 | .3557 | .3520 | .3483 |
| 0.4 | .3446 | .3409 | .3372 | .3336 | .3300 | .3264 | .3228 | .3192 | .3156 | .3121 |
| 0.5 | .3085 | .3050 | .3015 | .2981 | .2946 | .2912 | .2877 | .2843 | .2810 | .2776 |
| 0.6 | .2743 | .2709 | .2676 | .2643 | .2611 | .2578 | .2546 | .2514 | .2483 | .2451 |
| 0.7 | .2420 | .2389 | .2358 | .2327 | .2296 | .2266 | .2236 | .2206 | .2177 | .2148 |
| 0.8 | .2119 | .2090 | .2061 | .2033 | .2005 | .1977 | .1949 | .1922 | .1894 | .1867 |
| 0.9 | .1841 | .1814 | .1788 | .1762 | .1736 | .1711 | .1685 | .1660 | .1635 | .1611 |
| 1.0 | .1587 | .1562 | .1539 | .1515 | .1492 | .1469 | .1446 | .1423 | .1401 | .1379 |
| 1.1 | .1357 | .1335 | .1314 | .1292 | .1271 | .1251 | .1230 | .1210 | .1190 | .1170 |
| 1.2 | .1151 | .1131 | .1112 | .1093 | .1075 | .1056 | .1038 | .1020 | .1003 | .0985 |
| 1.3 | .0968 | .0951 | .0934 | .0918 | .0901 | .0885 | .0869 | .0853 | .0838 | .0823 |
| 1.4 | .0808 | .0793 | .0778 | .0764 | .0749 | .0735 | .0722 | .0708 | .0694 | .0681 |
| 1.5 | .0668 | .0655 | .0643 | .0630 | .0618 | .0606 | .0594 | .0582 | .0571 | .0559 |
| 1.6 | .0548 | .0537 | .0526 | .0516 | .0505 | .0495 | .0485 | .0475 | .0465 | .0455 |
| 1.7 | .0446 | .0436 | .0427 | .0418 | .0409 | .0401 | .0392 | .0384 | .0375 | .0367 |
| 1.8 | .0359 | .0352 | .0344 | .0336 | .0329 | .0322 | .0314 | .0307 | .0301 | .0294 |
| 1.9 | .0287 | .0281 | .0274 | .0268 | .0262 | .0256 | .0250 | .0244 | .0239 | .0233 |
| 2.0 | .0228 | .0222 | .0217 | .0212 | .0207 | .0202 | .0197 | .0192 | .0188 | .0183 |
| 2.1 | .0179 | .0174 | .0170 | .0166 | .0162 | .0158 | .0154 | .0150 | .0146 | .0143 |
| 2.2 | .0139 | .0136 | .0132 | .0129 | .0125 | .0122 | .0119 | .0116 | .0113 | .0110 |
| 2.3 | .0107 | .0104 | .0102 | .0099 | .0096 | .0094 | .0091 | .0089 | .0087 | .0084 |
| 2.4 | .0082 | .0080 | .0078 | .0075 | .0073 | .0071 | .0069 | .0068 | .0066 | .0064 |
| 2.5 | .0062 | .0060 | .0059 | .0057 | .0055 | .0054 | .0052 | .0051 | .0049 | .0048 |
| 2.6 | .0047 | .0045 | .0044 | .0043 | .0041 | .0040 | .0039 | .0038 | .0037 | .0036 |
| 2.7 | .0035 | .0034 | .0033 | .0032 | .0031 | .0030 | .0029 | .0028 | .0027 | .0026 |
| 2.8 | .0026 | .0025 | .0024 | .0023 | .0023 | .0022 | .0021 | .0021 | .0020 | .0019 |
| 2.9 | .0019 | .0018 | .0017 | .0017 | .0016 | .0016 | .0015 | .0015 | .0014 | .0014 |
| 3.0 | .00135 | | | | | | | | | |
| 3.5 | .000 233 | | | | | | | | | |
| 4.0 | .000 031 7 | | | | | | | | | |
| 4.5 | .000 003 40 | | | | | | | | | |
| 5.0 | .000 00 | 00 287 | | | | | | | | |

From R. E. Walpole, *Introduction to Statistics* (New York: Macmillan, 1968).

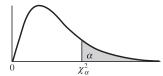
Table 5 Percentage Points of the t Distributions



| | | | -α | | |
|-------|-------|--------|--------|--------|------|
| t.100 | t.050 | t.025 | t.010 | t.005 | df |
| 3.078 | 6.314 | 12.706 | 31.821 | 63.657 | 1 |
| 1.886 | 2.920 | 4.303 | 6.965 | 9.925 | 2 |
| 1.638 | 2.353 | 3.182 | 4.541 | 5.841 | 3 |
| 1.533 | 2.132 | 2.776 | 3.747 | 4.604 | 4 |
| 1.476 | 2.015 | 2.571 | 3.365 | 4.032 | 5 |
| 1.440 | 1.943 | 2.447 | 3.143 | 3.707 | 6 |
| 1.415 | 1.895 | 2.365 | 2.998 | 3.499 | 7 |
| 1.397 | 1.860 | 2.306 | 2.896 | 3.355 | 8 |
| 1.383 | 1.833 | 2.262 | 2.821 | 3.250 | 9 |
| 1.372 | 1.812 | 2.228 | 2.764 | 3.169 | 10 |
| 1.363 | 1.796 | 2.201 | 2.718 | 3.106 | 11 |
| 1.356 | 1.782 | 2.179 | 2.681 | 3.055 | 12 |
| 1.350 | 1.771 | 2.160 | 2.650 | 3.012 | 13 |
| 1.345 | 1.761 | 2.145 | 2.624 | 2.977 | 14 |
| 1.341 | 1.753 | 2.131 | 2.602 | 2.947 | 15 |
| 1.337 | 1.746 | 2.120 | 2.583 | 2.921 | 16 |
| 1.333 | 1.740 | 2.110 | 2.567 | 2.898 | 17 |
| 1.330 | 1.734 | 2.101 | 2.552 | 2.878 | 18 |
| 1.328 | 1.729 | 2.093 | 2.539 | 2.861 | 19 |
| 1.325 | 1.725 | 2.086 | 2.528 | 2.845 | 20 |
| 1.323 | 1.721 | 2.080 | 2.518 | 2.831 | 21 |
| 1.321 | 1.717 | 2.074 | 2.508 | 2.819 | 22 |
| 1.319 | 1.714 | 2.069 | 2.500 | 2.807 | 23 |
| 1.318 | 1.711 | 2.064 | 2.492 | 2.797 | 24 |
| 1.316 | 1.708 | 2.060 | 2.485 | 2.787 | 25 |
| 1.315 | 1.706 | 2.056 | 2.479 | 2.779 | 26 |
| 1.314 | 1.703 | 2.052 | 2.473 | 2.771 | 27 |
| 1.313 | 1.701 | 2.048 | 2.467 | 2.763 | 28 |
| 1.311 | 1.699 | 2.045 | 2.462 | 2.756 | 29 |
| 1.282 | 1.645 | 1.960 | 2.326 | 2.576 | inf. |

From "Table of Percentage Points of the *t*-Distribution." Computed by Maxine Merrington, *Biometrika*, Vol. 32 (1941), p. 300.

Table 6 Percentage Points of the χ^2 Distributions



| df | X _{0.995} | χ _{0.990} | χ _{0.975} ² | X _{0.950} | X _{0.900} |
|-----|--------------------|--------------------|---------------------------------|--------------------|--------------------|
| | | | | | |
| 1 | 0.0000393 | 0.0001571 | 0.0009821 | 0.0039321 | 0.0157908 |
| 2 | 0.0100251 | 0.0201007 | 0.0506356 | 0.102587 | 0.210720 |
| 3 | 0.0717212 | 0.114832 | 0.215795 | 0.351846 | 0.584375 |
| 4 | 0.206990 | 0.297110 | 0.484419 | 0.710721 | 1.063623 |
| 5 | 0.411740 | 0.554300 | 0.831211 | 1.145476 | 1.61031 |
| 6 | 0.675727 | 0.872085 | 1.237347 | 1.63539 | 2.20413 |
| 7 | 0.989265 | 1.239043 | 1.68987 | 2.16735 | 2.83311 |
| 8 | 1.344419 | 1.646482 | 2.17973 | 2.73264 | 3.48954 |
| 9 | 1.734926 | 2.087912 | 2.70039 | 3.32511 | 4.16816 |
| 10 | 2.15585 | 2.55821 | 3.24697 | 3.94030 | 4.86518 |
| 11 | 2.60321 | 3.05347 | 3.81575 | 4.57481 | 5.57779 |
| 12 | 3.07382 | 3.57056 | 4.40379 | 5.22603 | 6.30380 |
| 13 | 3.56503 | 4.10691 | 5.00874 | 5.89186 | 7.04150 |
| 14 | 4.07468 | 4.66043 | 5.62872 | 6.57063 | 7.78953 |
| 15 | 4.60094 | 5.22935 | 6.26214 | 7.26094 | 8.54675 |
| 16 | 5.14224 | 5.81221 | 6.90766 | 7.96164 | 9.31223 |
| 17 | 5.69724 | 6.40776 | 7.56418 | 8.67176 | 10.0852 |
| 18 | 6.26481 | 7.01491 | 8.23075 | 9.39046 | 10.8649 |
| 19 | 6.84398 | 7.63273 | 8.90655 | 10.1170 | 11.6509 |
| 20 | 7.43386 | 8.26040 | 9.59083 | 10.8508 | 12.4426 |
| 21 | 8.03366 | 8.89720 | 10.28293 | 11.5913 | 13.2396 |
| 22 | 8.64272 | 9.54249 | 10.9823 | 12.3380 | 14.0415 |
| 23 | 9.26042 | 10.19567 | 11.6885 | 13.0905 | 14.8479 |
| 24 | 9.88623 | 10.8564 | 12.4011 | 13.8484 | 15.6587 |
| 25 | 10.5197 | 11.5240 | 13.1197 | 14.6114 | 16.4734 |
| 26 | 11.1603 | 12.1981 | 13.8439 | 15.3791 | 17.2919 |
| 27 | 11.8076 | 12.8786 | 14.5733 | 16.1513 | 18.1138 |
| 28 | 12.4613 | 13.5648 | 15.3079 | 16.9279 | 18.9392 |
| 29 | 13.1211 | 14.2565 | 16.0471 | 17.7083 | 19.7677 |
| 30 | 13.7867 | 14.9535 | 16.7908 | 18.4926 | 20.5992 |
| 40 | 20.7065 | 22.1643 | 24.4331 | 26.5093 | 29.0505 |
| 50 | 27.9907 | 29.7067 | 32.3574 | 34.7642 | 37.6886 |
| 60 | 35.5346 | 37.4848 | 40.4817 | 43.1879 | 46.4589 |
| 70 | 43.2752 | 45.4418 | 48.7576 | 51.7393 | 55.3290 |
| 80 | 51.1720 | 53.5400 | 57.1532 | 60.3915 | 64.2778 |
| 90 | 59.1963 | 61.7541 | 65.6466 | 69.1260 | 73.2912 |
| 100 | 67.3276 | 70.0648 | 74.2219 | 77.9295 | 82.3581 |
| 100 | 01.3210 | 70.0048 | 14.2219 | 11.7293 | 02.3301 |

Table 6 (Continued)

| $\chi^2_{0.100}$ | $\chi^2_{0.050}$ | $\chi^{2}_{0.025}$ | $\chi^2_{0.010}$ | $\chi^2_{0.005}$ | df |
|------------------|------------------|--------------------|------------------|------------------|-----|
| 2.70554 | 3.84146 | 5.02389 | 6.63490 | 7.87944 | 1 |
| 4.60517 | 5.99147 | 7.37776 | 9.21034 | 10.5966 | 2 |
| 6.25139 | 7.81473 | 9.34840 | 11.3449 | 12.8381 | 3 |
| 7.77944 | 9.48773 | 11.1433 | 13.2767 | 14.8602 | 4 |
| 9.23635 | 11.0705 | 12.8325 | 15.0863 | 16.7496 | 5 |
| 10.6446 | 12.5916 | 14.4494 | 16.8119 | 18.5476 | 6 |
| 12.0170 | 14.0671 | 16.0128 | 18.4753 | 20.2777 | 7 |
| 13.3616 | 15.5073 | 17.5346 | 20.0902 | 21.9550 | 8 |
| 14.6837 | 16.9190 | 19.0228 | 21.6660 | 23.5893 | 9 |
| 15.9871 | 18.3070 | 20.4831 | 23.2093 | 25.1882 | 10 |
| 17.2750 | 19.6751 | 21.9200 | 24.7250 | 26.7569 | 11 |
| 18.5494 | 21.0261 | 23.3367 | 26.2170 | 28.2995 | 12 |
| 19.8119 | 22.3621 | 24.7356 | 27.6883 | 29.8194 | 13 |
| 21.0642 | 23.6848 | 26.1190 | 29.1413 | 31.3193 | 14 |
| 22.3072 | 24.9958 | 27.4884 | 30.5779 | 32.8013 | 15 |
| 23.5418 | 26.2962 | 28.8454 | 31.9999 | 34.2672 | 16 |
| 24.7690 | 27.5871 | 30.1910 | 33.4087 | 35.7185 | 17 |
| 25.9894 | 28.8693 | 31.5264 | 34.8053 | 37.1564 | 18 |
| 27.2036 | 30.1435 | 32.8523 | 36.1908 | 38.5822 | 19 |
| 28.4120 | 31.4104 | 34.1696 | 37.5662 | 39.9968 | 20 |
| 29.6151 | 32.6705 | 35.4789 | 38.9321 | 41.4010 | 21 |
| 30.8133 | 33.9244 | 36.7807 | 40.2894 | 42.7956 | 22 |
| 32.0069 | 35.1725 | 38.0757 | 41.6384 | 44.1813 | 23 |
| 33.1963 | 36.4151 | 39.3641 | 42.9798 | 45.5585 | 24 |
| 34.3816 | 37.6525 | 40.6465 | 44.3141 | 46.9278 | 25 |
| 35.5631 | 38.8852 | 41.9232 | 45.6417 | 48.2899 | 26 |
| 36.7412 | 40.1133 | 43.1944 | 46.9630 | 49.6449 | 27 |
| 37.9159 | 41.3372 | 44.4607 | 48.2782 | 50.9933 | 28 |
| 39.0875 | 42.5569 | 45.7222 | 49.5879 | 52.3356 | 29 |
| 40.2560 | 43.7729 | 46.9792 | 50.8922 | 53.6720 | 30 |
| 51.8050 | 55.7585 | 59.3417 | 63.6907 | 66.7659 | 40 |
| 63.1671 | 67.5048 | 71.4202 | 76.1539 | 79.4900 | 50 |
| 74.3970 | 79.0819 | 83.2976 | 88.3794 | 91.9517 | 60 |
| 85.5271 | 90.5312 | 95.0231 | 100.425 | 104.215 | 70 |
| 96.5782 | 101.879 | 106.629 | 112.329 | 116.321 | 80 |
| 107.565 | 113.145 | 118.136 | 124.116 | 128.299 | 90 |
| 118.498 | 124.342 | 129.561 | 135.807 | 140.169 | 100 |

From "Tables of the Percentage Points of the χ^2 -Distribution." *Biometrika*, Vol. 32 (1941), pp. 188–189, by Catherine M. Thompson.