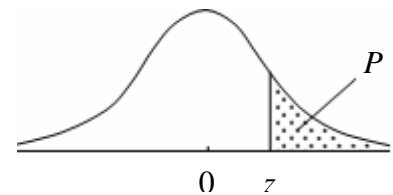


### Table of the Standardised Normal Distribution

The table gives the probability

$$P = \Pr(Z > z)$$

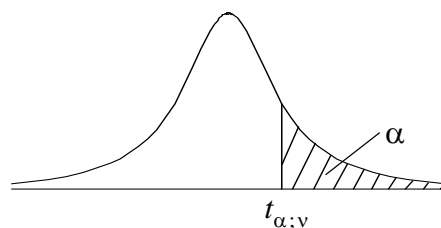
where  $Z \sim \mathcal{N}(0,1)$ .



| z   | .00     | .01     | .02     | .03     | .04     | .05     | .06     | .07     | .08     | .09     |
|-----|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0.0 | 0.5000  | 0.4960  | 0.4920  | 0.4880  | 0.4840  | 0.4801  | 0.4761  | 0.4721  | 0.4681  | 0.4641  |
| 0.1 | 0.4602  | 0.4562  | 0.4522  | 0.4483  | 0.4443  | 0.4404  | 0.4364  | 0.4325  | 0.4286  | 0.4247  |
| 0.2 | 0.4207  | 0.4168  | 0.4129  | 0.4090  | 0.4052  | 0.4013  | 0.3974  | 0.3936  | 0.3897  | 0.3859  |
| 0.3 | 0.3821  | 0.3783  | 0.3745  | 0.3707  | 0.3669  | 0.3632  | 0.3594  | 0.3557  | 0.3520  | 0.3483  |
| 0.4 | 0.3446  | 0.3409  | 0.3372  | 0.3336  | 0.3300  | 0.3264  | 0.3228  | 0.3192  | 0.3156  | 0.3121  |
| 0.5 | 0.3085  | 0.3050  | 0.3015  | 0.2981  | 0.2946  | 0.2912  | 0.2877  | 0.2843  | 0.2810  | 0.2776  |
| 0.6 | 0.2743  | 0.2709  | 0.2676  | 0.2643  | 0.2611  | 0.2578  | 0.2546  | 0.2514  | 0.2483  | 0.2451  |
| 0.7 | 0.2420  | 0.2389  | 0.2358  | 0.2327  | 0.2296  | 0.2266  | 0.2236  | 0.2206  | 0.2177  | 0.2148  |
| 0.8 | 0.2119  | 0.2090  | 0.2061  | 0.2033  | 0.2005  | 0.1977  | 0.1949  | 0.1922  | 0.1894  | 0.1867  |
| 0.9 | 0.1841  | 0.1814  | 0.1788  | 0.1762  | 0.1736  | 0.1711  | 0.1685  | 0.1660  | 0.1635  | 0.1611  |
| 1.0 | 0.1587  | 0.1562  | 0.1539  | 0.1515  | 0.1492  | 0.1469  | 0.1446  | 0.1423  | 0.1401  | 0.1379  |
| 1.1 | 0.1357  | 0.1335  | 0.1314  | 0.1292  | 0.1271  | 0.1251  | 0.1230  | 0.1210  | 0.1190  | 0.1170  |
| 1.2 | 0.1151  | 0.1131  | 0.1112  | 0.1093  | 0.1075  | 0.1056  | 0.1038  | 0.1020  | 0.1003  | 0.0985  |
| 1.3 | 0.0968  | 0.0951  | 0.0934  | 0.0918  | 0.0901  | 0.0885  | 0.0869  | 0.0853  | 0.0838  | 0.0823  |
| 1.4 | 0.0808  | 0.0793  | 0.0778  | 0.0764  | 0.0749  | 0.0735  | 0.0721  | 0.0708  | 0.0694  | 0.0681  |
| 1.5 | 0.0668  | 0.0655  | 0.0643  | 0.0630  | 0.0618  | 0.0606  | 0.0594  | 0.0582  | 0.0571  | 0.0559  |
| 1.6 | 0.0548  | 0.0537  | 0.0526  | 0.0516  | 0.0505  | 0.0495  | 0.0485  | 0.0475  | 0.0465  | 0.0455  |
| 1.7 | 0.0446  | 0.0436  | 0.0427  | 0.0418  | 0.0409  | 0.0401  | 0.0392  | 0.0384  | 0.0375  | 0.0367  |
| 1.8 | 0.0359  | 0.0351  | 0.0344  | 0.0336  | 0.0329  | 0.0322  | 0.0314  | 0.0307  | 0.0301  | 0.0294  |
| 1.9 | 0.0287  | 0.0281  | 0.0274  | 0.0268  | 0.0262  | 0.0256  | 0.0250  | 0.0244  | 0.0239  | 0.0233  |
| 2.0 | 0.0228  | 0.0222  | 0.0217  | 0.0212  | 0.0207  | 0.0202  | 0.0197  | 0.0192  | 0.0188  | 0.0183  |
| 2.1 | 0.0179  | 0.0174  | 0.0170  | 0.0166  | 0.0162  | 0.0158  | 0.0154  | 0.0150  | 0.0146  | 0.0143  |
| 2.2 | 0.0139  | 0.0136  | 0.0132  | 0.0129  | 0.0126  | 0.0122  | 0.0119  | 0.0116  | 0.0113  | 0.0110  |
| 2.3 | 0.0107  | 0.0104  | 0.0102  | 0.00990 | 0.00964 | 0.00939 | 0.00914 | 0.00889 | 0.00866 | 0.00842 |
| 2.4 | 0.00820 | 0.00798 | 0.00776 | 0.00755 | 0.00734 | 0.00714 | 0.00695 | 0.00676 | 0.00657 | 0.00639 |
| 2.5 | 0.00621 | 0.00604 | 0.00587 | 0.00570 | 0.00554 | 0.00539 | 0.00523 | 0.00508 | 0.00494 | 0.00480 |
| 2.6 | 0.00466 | 0.00453 | 0.00440 | 0.00427 | 0.00415 | 0.00402 | 0.00391 | 0.00379 | 0.00368 | 0.00357 |
| 2.7 | 0.00347 | 0.00336 | 0.00326 | 0.00317 | 0.00307 | 0.00298 | 0.00289 | 0.00280 | 0.00272 | 0.00264 |
| 2.8 | 0.00256 | 0.00248 | 0.00240 | 0.00233 | 0.00226 | 0.00219 | 0.00212 | 0.00205 | 0.00199 | 0.00193 |
| 2.9 | 0.00187 | 0.00181 | 0.00175 | 0.00169 | 0.00164 | 0.00159 | 0.00154 | 0.00149 | 0.00144 | 0.00139 |
| 3.0 | 0.00135 | 0.00131 | 0.00126 | 0.00122 | 0.00118 | 0.00114 | 0.00111 | 0.00107 | 0.00104 | 0.00100 |
| 3.1 | 0.00097 | 0.00094 | 0.00090 | 0.00087 | 0.00084 | 0.00082 | 0.00079 | 0.00076 | 0.00074 | 0.00071 |
| 3.2 | 0.00069 | 0.00066 | 0.00064 | 0.00062 | 0.00060 | 0.00058 | 0.00056 | 0.00054 | 0.00052 | 0.00050 |
| 3.3 | 0.00048 | 0.00047 | 0.00045 | 0.00043 | 0.00042 | 0.00040 | 0.00039 | 0.00038 | 0.00036 | 0.00035 |
| 3.4 | 0.00034 | 0.00032 | 0.00031 | 0.00030 | 0.00029 | 0.00028 | 0.00027 | 0.00026 | 0.00025 | 0.00024 |
| 3.5 | 0.00023 | 0.00022 | 0.00022 | 0.00021 | 0.00020 | 0.00019 | 0.00019 | 0.00018 | 0.00017 | 0.00017 |
| 3.6 | 0.00016 | 0.00015 | 0.00015 | 0.00014 | 0.00014 | 0.00013 | 0.00013 | 0.00012 | 0.00012 | 0.00011 |
| 3.7 | 0.00011 | 0.00010 | 0.00010 | 0.00010 | 0.00009 | 0.00009 | 0.00008 | 0.00008 | 0.00008 | 0.00008 |
| 3.8 | 0.00007 | 0.00007 | 0.00007 | 0.00006 | 0.00006 | 0.00006 | 0.00006 | 0.00005 | 0.00005 | 0.00005 |
| 3.9 | 0.00005 | 0.00005 | 0.00004 | 0.00004 | 0.00004 | 0.00004 | 0.00004 | 0.00004 | 0.00003 | 0.00003 |

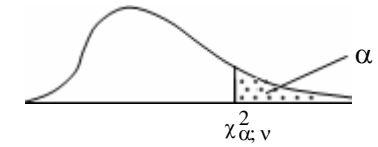
## Table of the Student's $t$ -distribution

The table gives the values of  $t_{\alpha;v}$  where  
 $\Pr(T_v > t_{\alpha;v}) = \alpha$ , with  $v$  degrees of freedom



| $\alpha \backslash v$ | 0.1   | 0.05  | 0.025  | 0.01   | 0.005  | 0.001   | 0.0005  |
|-----------------------|-------|-------|--------|--------|--------|---------|---------|
| 1                     | 3.078 | 6.314 | 12.076 | 31.821 | 63.657 | 318.310 | 636.620 |
| 2                     | 1.886 | 2.920 | 4.303  | 6.965  | 9.925  | 22.326  | 31.598  |
| 3                     | 1.638 | 2.353 | 3.182  | 4.541  | 5.841  | 10.213  | 12.924  |
| 4                     | 1.533 | 2.132 | 2.776  | 3.747  | 4.604  | 7.173   | 8.610   |
| 5                     | 1.476 | 2.015 | 2.571  | 3.365  | 4.032  | 5.893   | 6.869   |
| 6                     | 1.440 | 1.943 | 2.447  | 3.143  | 3.707  | 5.208   | 5.959   |
| 7                     | 1.415 | 1.895 | 2.365  | 2.998  | 3.499  | 4.785   | 5.408   |
| 8                     | 1.397 | 1.860 | 2.306  | 2.896  | 3.355  | 4.501   | 5.041   |
| 9                     | 1.383 | 1.833 | 2.262  | 2.821  | 3.250  | 4.297   | 4.781   |
| 10                    | 1.372 | 1.812 | 2.228  | 2.764  | 3.169  | 4.144   | 4.587   |
| 11                    | 1.363 | 1.796 | 2.201  | 2.718  | 3.106  | 4.025   | 4.437   |
| 12                    | 1.356 | 1.782 | 2.179  | 2.681  | 3.055  | 3.930   | 4.318   |
| 13                    | 1.350 | 1.771 | 2.160  | 2.650  | 3.012  | 3.852   | 4.221   |
| 14                    | 1.345 | 1.761 | 2.145  | 2.624  | 2.977  | 3.787   | 4.140   |
| 15                    | 1.341 | 1.753 | 2.131  | 2.602  | 2.947  | 3.733   | 4.073   |
| 16                    | 1.337 | 1.746 | 2.120  | 2.583  | 2.921  | 3.686   | 4.015   |
| 17                    | 1.333 | 1.740 | 2.110  | 2.567  | 2.898  | 3.646   | 3.965   |
| 18                    | 1.330 | 1.734 | 2.101  | 2.552  | 2.878  | 3.610   | 3.922   |
| 19                    | 1.328 | 1.729 | 2.093  | 2.539  | 2.861  | 3.579   | 3.883   |
| 20                    | 1.325 | 1.725 | 2.086  | 2.528  | 2.845  | 3.552   | 3.850   |
| 21                    | 1.323 | 1.721 | 2.080  | 2.518  | 2.831  | 3.527   | 3.819   |
| 22                    | 1.321 | 1.717 | 2.074  | 2.508  | 2.819  | 3.505   | 3.792   |
| 23                    | 1.319 | 1.714 | 2.069  | 2.500  | 2.807  | 3.485   | 3.767   |
| 24                    | 1.318 | 1.711 | 2.064  | 2.492  | 2.797  | 3.467   | 3.745   |
| 25                    | 1.316 | 1.708 | 2.060  | 2.485  | 2.787  | 3.450   | 3.725   |
| 26                    | 1.315 | 1.706 | 2.056  | 2.479  | 2.779  | 3.435   | 3.707   |
| 27                    | 1.314 | 1.703 | 2.052  | 2.473  | 2.771  | 3.421   | 3.690   |
| 28                    | 1.313 | 1.701 | 2.048  | 2.467  | 2.763  | 3.408   | 3.674   |
| 29                    | 1.311 | 1.699 | 2.045  | 2.462  | 2.756  | 3.396   | 3.659   |
| 30                    | 1.310 | 1.697 | 2.042  | 2.457  | 2.750  | 3.385   | 3.646   |
| 40                    | 1.303 | 1.684 | 2.021  | 2.423  | 2.704  | 3.307   | 3.551   |
| 60                    | 1.296 | 1.671 | 2.000  | 2.390  | 2.660  | 3.232   | 3.460   |
| 120                   | 1.289 | 1.658 | 1.980  | 2.358  | 2.617  | 3.160   | 3.373   |
| $\infty$              | 1.282 | 1.645 | 1.960  | 2.326  | 2.576  | 3.090   | 3.291   |

**Table of the Chi-square Distribution**

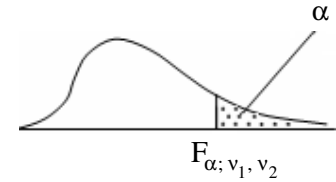


| $\alpha =$   | 0.995    | 0.99     | 0.98     | 0.975    | 0.95    | 0.90   | 0.80   | 0.20    | 0.10    | 0.05    | 0.025   | 0.02    | 0.01    | 0.005   | 0.001   | $=\alpha$    |
|--------------|----------|----------|----------|----------|---------|--------|--------|---------|---------|---------|---------|---------|---------|---------|---------|--------------|
| <b>V = 1</b> | 0.000393 | 0.000157 | 0.000628 | 0.000982 | 0.00393 | 0.0158 | 0.0642 | 1.642   | 2.706   | 3.841   | 5.024   | 5.412   | 6.635   | 7.879   | 10.827  | <b>V = 1</b> |
| 2            | 0.0100   | 0.0201   | 0.0404   | 0.0506   | 0.103   | 0.211  | 0.446  | 3.219   | 4.605   | 5.991   | 7.378   | 7.824   | 9.210   | 10.597  | 13.815  | 2            |
| 3            | 0.0717   | 0.115    | 0.185    | 0.216    | 0.352   | 0.584  | 1.005  | 4.642   | 6.251   | 7.815   | 9.348   | 9.837   | 11.345  | 12.838  | 16.268  | 3            |
| 4            | 0.207    | 0.297    | 0.429    | 0.484    | 0.711   | 1.064  | 1.649  | 5.989   | 7.779   | 9.488   | 11.143  | 11.668  | 13.277  | 14.860  | 18.465  | 4            |
| 5            | 0.412    | 0.554    | 0.752    | 0.831    | 1.145   | 1.610  | 2.343  | 7.289   | 9.236   | 11.070  | 12.832  | 13.388  | 15.086  | 16.750  | 20.517  | 5            |
| 6            | 0.676    | 0.872    | 1.134    | 1.237    | 1.635   | 2.204  | 3.070  | 8.558   | 10.645  | 12.592  | 14.449  | 15.033  | 16.812  | 18.548  | 22.457  | 6            |
| 7            | 0.989    | 1.239    | 1.564    | 1.690    | 2.167   | 2.833  | 3.822  | 9.803   | 12.017  | 14.067  | 16.013  | 16.622  | 18.475  | 20.278  | 24.322  | 7            |
| 8            | 1.344    | 1.646    | 2.032    | 2.180    | 2.733   | 3.490  | 4.594  | 11.030  | 13.362  | 15.507  | 17.535  | 18.168  | 20.090  | 21.955  | 26.125  | 8            |
| 9            | 1.735    | 2.088    | 2.532    | 2.700    | 3.325   | 4.168  | 5.380  | 12.242  | 14.684  | 16.919  | 19.023  | 19.679  | 21.666  | 23.589  | 27.877  | 9            |
| 10           | 2.156    | 2.558    | 3.059    | 3.247    | 3.940   | 4.865  | 6.179  | 13.442  | 15.987  | 18.307  | 20.483  | 21.161  | 23.209  | 25.188  | 29.588  | 10           |
| 11           | 2.603    | 3.053    | 3.609    | 3.816    | 4.575   | 5.578  | 6.989  | 14.631  | 17.275  | 19.675  | 21.920  | 22.618  | 24.725  | 26.757  | 31.264  | 11           |
| 12           | 3.074    | 3.571    | 4.178    | 4.404    | 5.226   | 6.304  | 7.807  | 15.812  | 18.549  | 21.026  | 23.337  | 24.054  | 26.217  | 28.300  | 32.909  | 12           |
| 13           | 3.565    | 4.107    | 4.765    | 5.009    | 5.892   | 7.042  | 8.634  | 16.985  | 19.812  | 22.362  | 24.736  | 25.472  | 27.688  | 29.819  | 34.528  | 13           |
| 14           | 4.075    | 4.660    | 5.368    | 5.629    | 6.571   | 7.790  | 9.467  | 18.151  | 21.064  | 23.685  | 26.119  | 26.873  | 29.141  | 31.319  | 36.123  | 14           |
| 15           | 4.601    | 5.229    | 5.985    | 6.262    | 7.261   | 8.547  | 10.307 | 19.311  | 22.307  | 24.996  | 27.488  | 28.259  | 30.578  | 32.801  | 37.697  | 15           |
| 16           | 5.142    | 5.812    | 6.614    | 6.908    | 7.962   | 9.312  | 11.152 | 20.465  | 23.542  | 26.296  | 28.845  | 29.633  | 32.000  | 34.267  | 39.252  | 16           |
| 17           | 5.697    | 6.408    | 7.255    | 7.564    | 8.672   | 10.085 | 12.002 | 21.615  | 24.769  | 27.587  | 30.191  | 30.995  | 33.409  | 35.718  | 40.790  | 17           |
| 18           | 6.265    | 7.015    | 7.906    | 8.231    | 9.390   | 10.865 | 12.857 | 22.760  | 25.989  | 28.869  | 31.526  | 32.346  | 34.805  | 37.156  | 42.312  | 18           |
| 19           | 6.844    | 7.633    | 8.567    | 8.907    | 10.117  | 11.651 | 13.716 | 23.900  | 27.204  | 30.144  | 32.852  | 33.687  | 36.191  | 38.582  | 43.820  | 19           |
| 20           | 7.434    | 8.260    | 9.237    | 9.591    | 10.851  | 12.443 | 14.578 | 25.038  | 28.412  | 31.410  | 34.170  | 35.020  | 37.566  | 39.997  | 45.315  | 20           |
| 21           | 8.034    | 8.897    | 9.915    | 10.283   | 11.591  | 13.240 | 15.445 | 26.171  | 29.615  | 32.671  | 35.479  | 36.343  | 38.932  | 41.401  | 46.797  | 21           |
| 22           | 8.643    | 9.542    | 10.600   | 10.982   | 12.338  | 14.041 | 16.314 | 27.301  | 30.813  | 33.924  | 36.781  | 37.659  | 40.289  | 42.796  | 48.268  | 22           |
| 23           | 9.260    | 10.196   | 11.293   | 11.688   | 13.091  | 14.848 | 17.187 | 28.429  | 32.007  | 35.172  | 38.076  | 38.968  | 41.638  | 44.181  | 49.728  | 23           |
| 24           | 9.886    | 10.856   | 11.992   | 12.401   | 13.848  | 15.659 | 18.062 | 29.553  | 33.196  | 36.415  | 39.364  | 40.270  | 42.980  | 45.558  | 51.179  | 24           |
| 25           | 10.520   | 11.524   | 12.697   | 13.120   | 14.611  | 16.473 | 18.940 | 30.675  | 34.382  | 37.652  | 40.646  | 41.566  | 44.314  | 46.928  | 52.620  | 25           |
| 26           | 11.160   | 12.198   | 13.409   | 13.844   | 15.379  | 17.292 | 19.820 | 31.795  | 35.563  | 38.885  | 41.923  | 42.856  | 45.642  | 48.290  | 54.052  | 26           |
| 27           | 11.808   | 12.879   | 14.125   | 14.573   | 16.151  | 18.114 | 20.703 | 32.912  | 36.741  | 40.113  | 43.194  | 44.140  | 46.963  | 49.645  | 55.476  | 27           |
| 28           | 12.461   | 13.565   | 14.847   | 15.308   | 16.928  | 18.939 | 21.588 | 34.027  | 37.916  | 41.337  | 44.461  | 45.419  | 48.278  | 50.993  | 56.893  | 28           |
| 29           | 13.121   | 14.256   | 15.574   | 16.047   | 17.708  | 19.768 | 22.475 | 35.139  | 39.087  | 42.557  | 45.722  | 46.693  | 49.588  | 52.336  | 58.302  | 29           |
| 30           | 13.787   | 14.953   | 16.306   | 16.791   | 18.493  | 20.599 | 23.364 | 36.250  | 40.256  | 43.773  | 46.979  | 47.962  | 50.892  | 53.672  | 59.703  | 30           |
| 40           | 20.706   | 22.164   | 23.838   | 24.433   | 26.509  | 29.051 | 32.345 | 47.269  | 51.805  | 55.759  | 59.342  | 60.436  | 63.691  | 66.766  | 73.402  | 40           |
| 50           | 27.991   | 29.707   | 31.664   | 32.357   | 34.764  | 37.689 | 41.449 | 58.164  | 63.167  | 67.505  | 71.420  | 72.613  | 76.154  | 79.490  | 86.661  | 50           |
| 60           | 35.535   | 37.485   | 39.699   | 40.482   | 43.188  | 46.459 | 50.641 | 68.972  | 74.397  | 79.082  | 83.298  | 84.580  | 88.379  | 91.952  | 99.607  | 60           |
| 70           | 43.275   | 45.442   | 47.893   | 48.758   | 51.739  | 55.329 | 59.898 | 79.715  | 85.527  | 90.531  | 95.023  | 96.388  | 100.425 | 104.215 | 112.317 | 70           |
| 80           | 51.171   | 53.539   | 56.213   | 57.153   | 60.391  | 64.278 | 69.207 | 90.405  | 96.578  | 101.880 | 106.629 | 108.069 | 112.329 | 116.321 | 124.839 | 80           |
| 90           | 59.196   | 61.754   | 64.634   | 65.646   | 69.126  | 73.291 | 78.558 | 101.054 | 107.565 | 113.145 | 118.136 | 119.648 | 124.116 | 128.299 | 137.208 | 90           |
| 100          | 67.327   | 70.065   | 73.142   | 74.222   | 77.929  | 82.358 | 87.945 | 111.667 | 118.498 | 124.342 | 129.561 | 131.142 | 135.807 | 140.170 | 149.449 | 100          |

## Table of F-Distribution (i)

For each pair of values  $v_1$  and  $v_2$ , the table gives the values of

$F_{\alpha; v_1, v_2}$  with  $\alpha = 0.05, 0.025, 0.01$ , and  $0.001$ .

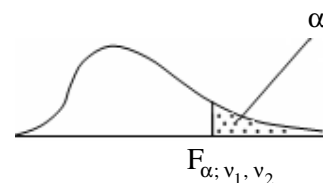


| $v_1 \backslash v_2$ | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10   | 12   | 15   | 24   | 40  | 60  | 120   | $\infty$                                      |
|----------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|---|---|---|---|
| 1                    | 161.4<br>648<br>4052<br>4053<br>$\times 100$ | 199.5<br>800<br>5000<br>5000<br>$\times 100$ | 215.7<br>864<br>5403<br>5404<br>$\times 100$ | 224.6<br>900<br>5625<br>5625<br>$\times 100$ | 230.2<br>922<br>5764<br>5764<br>$\times 100$ | 234.0<br>937<br>5859<br>5859<br>$\times 100$ | 236.8<br>948<br>5928<br>5929<br>$\times 100$ | 238.9<br>957<br>5981<br>5981<br>$\times 100$ | 240.5<br>963<br>6022<br>6023<br>$\times 100$ | 241.9<br>969<br>6056<br>6056<br>$\times 100$ | 243.9<br>977<br>6106<br>6107<br>$\times 100$ | 245.9<br>985<br>6157<br>6158<br>$\times 100$ | 249.0<br>997<br>6235<br>6235<br>$\times 100$ | 251.1<br>1006<br>6287<br>6287<br>$\times 100$ | 252.2<br>1010<br>6313<br>6313<br>$\times 100$ | 253.3<br>1014<br>6339<br>6340<br>$\times 100$ | 254.3<br>1018<br>6366<br>6366<br>$\times 100$ |
| 2                    | 18.5<br>38.5<br>98.5<br>998.5                | 19.0<br>39.0<br>99.0<br>999.0                | 19.2<br>39.2<br>99.2<br>999.2                | 19.2<br>39.2<br>99.2<br>999.2                | 19.3<br>39.3<br>99.3<br>999.3                | 19.3<br>39.3<br>99.3<br>999.3                | 19.4<br>39.4<br>99.4<br>999.4                | 19.4<br>39.4<br>99.4<br>999.4                | 19.4<br>39.4<br>99.4<br>999.4                | 19.4<br>39.4<br>99.4<br>999.4                | 19.4<br>39.4<br>99.4<br>999.4                | 19.4<br>39.4<br>99.4<br>999.4                | 19.5<br>39.5<br>99.5<br>999.5                | 19.5<br>39.5<br>99.5<br>999.5                 | 19.5<br>39.5<br>99.5<br>999.5                 | 19.5<br>39.5<br>99.5<br>999.5                 | 19.5<br>39.5<br>99.5<br>999.5                 |
| 3                    | 10.13<br>17.4<br>34.1<br>167.0               | 9.55<br>16.0<br>30.8<br>148.5                | 9.28<br>15.4<br>29.5<br>141.1                | 9.12<br>15.1<br>28.7<br>137.1                | 9.01<br>14.9<br>28.2<br>134.6                | 8.94<br>14.7<br>27.9<br>132.8                | 8.89<br>14.6<br>27.7<br>131.5                | 8.85<br>14.5<br>27.5<br>130.6                | 8.81<br>14.4<br>27.3<br>129.9                | 8.79<br>14.4<br>27.2<br>129.2                | 8.74<br>14.3<br>27.1<br>128.3                | 8.70<br>14.2<br>26.9<br>127.4                | 8.64<br>14.1<br>26.6<br>125.9                | 8.59<br>14.0<br>26.4<br>125.0                 | 8.57<br>14.0<br>26.3<br>124.5                 | 8.55<br>13.95<br>26.2<br>124.0                | 8.53<br>13.9<br>26.1<br>123.5                 |
| 4                    | 7.71<br>12.22<br>21.20<br>74.14              | 6.94<br>10.65<br>18.00<br>61.25              | 6.59<br>9.98<br>16.69<br>56.18               | 6.39<br>9.60<br>15.98<br>53.44               | 6.26<br>9.36<br>15.52<br>51.71               | 6.16<br>9.20<br>15.20<br>50.53               | 6.09<br>9.07<br>15.0<br>49.66                | 6.04<br>8.98<br>14.80<br>49.00               | 6.00<br>8.90<br>14.66<br>48.47               | 5.96<br>8.84<br>14.55<br>48.05               | 5.91<br>8.75<br>14.37<br>47.41               | 5.86<br>8.66<br>14.20<br>46.76               | 5.77<br>8.51<br>13.93<br>45.77               | 5.72<br>8.41<br>13.75<br>45.09                | 5.69<br>8.36<br>13.65<br>44.75                | 5.66<br>8.31<br>13.56<br>44.40                | 5.63<br>8.26<br>13.46<br>44.05                |
| 5                    | 6.61<br>10.01<br>16.26<br>47.18              | 5.79<br>8.43<br>13.27<br>37.12               | 5.41<br>7.76<br>12.06<br>33.20               | 5.19<br>7.39<br>11.39<br>31.09               | 5.05<br>7.15<br>10.97<br>29.75               | 4.95<br>6.98<br>10.67<br>28.83               | 4.88<br>6.85<br>10.46<br>28.16               | 4.82<br>6.76<br>10.29<br>27.65               | 4.77<br>6.68<br>10.16<br>27.24               | 4.74<br>6.62<br>10.05<br>26.92               | 4.68<br>6.52<br>9.89<br>26.42                | 4.62<br>6.43<br>9.72<br>25.91                | 4.53<br>6.28<br>9.47<br>25.14                | 4.46<br>6.18<br>9.29<br>24.60                 | 4.43<br>6.12<br>9.20<br>24.33                 | 4.40<br>6.07<br>9.11<br>24.06                 | 4.36<br>6.02<br>9.02<br>23.79                 |
| 6                    | 5.99<br>8.81<br>13.74<br>35.51               | 5.14<br>7.26<br>10.92<br>27.00               | 4.76<br>6.60<br>9.78<br>23.70                | 4.53<br>6.23<br>9.15<br>21.92                | 4.39<br>5.99<br>8.75<br>20.80                | 4.28<br>5.82<br>8.47<br>20.03                | 4.21<br>5.70<br>8.26<br>19.46                | 4.15<br>5.60<br>8.10<br>19.03                | 4.10<br>5.52<br>7.98<br>18.69                | 4.06<br>5.46<br>7.87<br>18.41                | 4.00<br>5.37<br>7.72<br>17.99                | 3.94<br>5.27<br>7.56<br>17.56                | 3.84<br>5.12<br>7.31<br>16.90                | 3.77<br>5.01<br>7.14<br>16.44                 | 3.74<br>4.96<br>7.06<br>16.21                 | 3.70<br>4.90<br>6.97<br>15.99                 | 3.67<br>4.85<br>6.88<br>15.75                 |
| 7                    | 5.59<br>8.07<br>12.25<br>29.25               | 4.74<br>6.54<br>9.55<br>21.69                | 4.35<br>5.89<br>8.45<br>18.77                | 4.12<br>5.52<br>7.85<br>17.20                | 3.97<br>5.29<br>7.46<br>16.21                | 3.87<br>5.12<br>7.19<br>15.52                | 3.79<br>4.99<br>6.99<br>15.02                | 3.73<br>4.90<br>6.84<br>14.63                | 3.68<br>4.82<br>6.72<br>14.33                | 3.64<br>4.76<br>6.62<br>14.08                | 3.57<br>4.67<br>6.47<br>13.71                | 3.51<br>4.57<br>6.31<br>13.32                | 3.41<br>4.42<br>6.07<br>12.73                | 3.34<br>4.31<br>5.91<br>12.33                 | 3.30<br>4.25<br>5.82<br>12.12                 | 3.27<br>4.20<br>5.74<br>11.91                 | 3.23<br>4.14<br>5.65<br>11.70                 |
| 8                    | 5.32<br>7.57<br>11.26<br>25.42               | 4.46<br>6.06<br>8.65<br>18.49                | 4.07<br>5.42<br>7.59<br>15.83                | 3.84<br>5.05<br>7.01<br>14.39                | 3.69<br>4.82<br>6.63<br>13.48                | 3.58<br>4.65<br>6.37<br>12.86                | 3.50<br>4.53<br>6.18<br>12.40                | 3.44<br>4.43<br>6.03<br>12.05                | 3.39<br>4.36<br>5.91<br>11.77                | 3.35<br>4.30<br>5.81<br>11.54                | 3.28<br>4.20<br>5.67<br>11.19                | 3.22<br>4.10<br>5.52<br>10.84                | 3.12<br>3.95<br>5.28<br>10.30                | 3.04<br>3.84<br>5.12<br>9.92                  | 3.01<br>3.78<br>5.03<br>9.73                  | 2.97<br>3.73<br>4.95<br>9.53                  | 2.93<br>3.67<br>4.86<br>9.34                  |
| 9                    | 5.12<br>7.21<br>10.56<br>22.86               | 4.26<br>5.71<br>8.02<br>16.39                | 3.86<br>5.08<br>6.99<br>13.90                | 3.63<br>4.72<br>6.42<br>12.56                | 3.48<br>4.48<br>6.06<br>11.71                | 3.37<br>4.32<br>5.80<br>11.13                | 3.29<br>4.20<br>5.61<br>10.69                | 3.23<br>4.10<br>5.47<br>10.37                | 3.18<br>4.03<br>5.35<br>10.11                | 3.14<br>3.96<br>5.26<br>9.87                 | 3.07<br>3.87<br>5.11<br>9.57                 | 3.01<br>3.77<br>4.96<br>9.24                 | 2.90<br>3.61<br>4.73<br>8.72                 | 2.83<br>3.51<br>4.57<br>8.37                  | 2.79<br>3.45<br>4.48<br>8.19                  | 2.75<br>3.39<br>4.40<br>8.00                  | 2.71<br>3.33<br>4.31<br>7.81                  |
| 10                   | 4.96<br>6.94<br>10.04<br>21.04               | 4.10<br>5.46<br>7.56<br>14.91                | 3.71<br>4.83<br>6.55<br>12.55                | 3.48<br>4.47<br>5.99<br>11.28                | 3.33<br>4.24<br>5.64<br>10.48                | 3.22<br>4.07<br>5.39<br>9.93                 | 3.14<br>3.95<br>5.20<br>9.52                 | 3.07<br>3.85<br>5.06<br>9.20                 | 3.02<br>3.78<br>4.94<br>8.96                 | 2.98<br>3.72<br>4.85<br>8.74                 | 2.91<br>3.62<br>4.71<br>8.44                 | 2.85<br>3.52<br>4.56<br>8.13                 | 2.74<br>3.37<br>4.33<br>7.64                 | 2.66<br>3.26<br>4.17<br>7.30                  | 2.62<br>3.20<br>4.08<br>7.12                  | 2.58<br>3.14<br>4.00<br>6.94                  | 2.54<br>3.08<br>3.91<br>6.76                  |
| 11                   | 4.84<br>6.72<br>9.65<br>19.69                | 3.98<br>5.26<br>7.21<br>13.81                | 3.59<br>4.63<br>6.22<br>11.56                | 3.36<br>4.28<br>5.67<br>10.35                | 3.20<br>4.04<br>5.32<br>9.58                 | 3.09<br>3.88<br>5.07<br>9.05                 | 3.01<br>3.76<br>4.89<br>8.66                 | 2.95<br>3.66<br>4.74<br>8.35                 | 2.90<br>3.59<br>4.63<br>8.12                 | 2.85<br>3.53<br>4.54<br>7.92                 | 2.79<br>3.43<br>4.40<br>7.63                 | 2.72<br>3.33<br>4.25<br>7.32                 | 2.61<br>3.17<br>4.02<br>6.85                 | 2.53<br>3.06<br>3.86<br>6.52                  | 2.49<br>3.00<br>3.78<br>6.35                  | 2.45<br>2.94<br>3.69<br>6.17                  | 2.40<br>2.88<br>3.60<br>6.00                  |
| 12                   | 4.75<br>6.55<br>9.33<br>18.64                | 3.89<br>5.10<br>6.93<br>12.97                | 3.49<br>4.47<br>5.95<br>10.80                | 3.26<br>4.12<br>5.41<br>9.63                 | 3.11<br>3.89<br>5.06<br>8.89                 | 3.00<br>3.73<br>4.82<br>8.38                 | 2.91<br>3.61<br>4.64<br>8.00                 | 2.85<br>3.51<br>4.50<br>7.71                 | 2.80<br>3.44<br>4.39<br>7.48                 | 2.75<br>3.37<br>4.30<br>7.29                 | 2.69<br>3.28<br>4.16<br>7.00                 | 2.62<br>3.18<br>4.01<br>6.71                 | 2.51<br>3.02<br>3.78<br>6.25                 | 2.43<br>2.91<br>3.62<br>5.93                  | 2.38<br>2.85<br>3.54<br>5.76                  | 2.34<br>2.79<br>3.45<br>5.59                  | 2.30<br>2.72<br>3.36<br>5.42                  |

## Table of F-Distribution (ii)

For each pair of values  $v_1$  and  $v_2$ , the table gives the values of

$F_{\alpha; v_1, v_2}$  with  $\alpha = 0.05, 0.025, 0.01$ , and  $0.001$ .

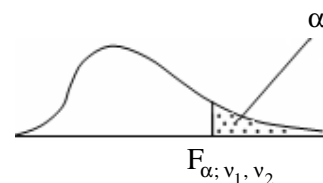


| $v_1 \backslash v_2$ | 1                             | 2                             | 3                             | 4                            | 5                            | 6                            | 7                            | 8                            | 9                            | 10                           | 12                           | 15                           | 24                           | 40                           | 60                           | 120                          | $\infty$                     |
|----------------------|-------------------------------|-------------------------------|-------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|
| 13                   | 4.67<br>6.41<br>9.07<br>17.82 | 3.81<br>4.97<br>6.70<br>12.31 | 3.41<br>4.35<br>5.74<br>10.21 | 3.18<br>4.00<br>5.21<br>9.07 | 3.03<br>3.77<br>4.86<br>8.35 | 2.92<br>3.60<br>4.62<br>7.86 | 2.83<br>3.48<br>4.44<br>7.49 | 2.77<br>3.39<br>4.30<br>7.21 | 2.71<br>3.31<br>4.19<br>6.98 | 2.67<br>3.25<br>4.10<br>6.80 | 2.60<br>3.15<br>3.96<br>6.52 | 2.53<br>3.05<br>3.82<br>6.23 | 2.42<br>2.89<br>3.59<br>5.78 | 2.34<br>2.78<br>3.43<br>5.47 | 2.30<br>2.72<br>3.34<br>5.30 | 2.25<br>2.66<br>3.25<br>5.14 | 2.21<br>2.60<br>3.17<br>4.97 |
| 14                   | 4.60<br>6.30<br>8.86<br>17.14 | 3.74<br>4.86<br>6.51<br>11.78 | 3.34<br>4.24<br>5.56<br>9.73  | 3.11<br>3.89<br>5.04<br>8.62 | 2.96<br>3.66<br>4.70<br>7.92 | 2.85<br>3.50<br>4.46<br>7.44 | 2.76<br>3.38<br>4.28<br>7.08 | 2.70<br>3.29<br>4.14<br>6.80 | 2.65<br>3.21<br>4.03<br>6.58 | 2.60<br>3.15<br>3.80<br>6.40 | 2.53<br>3.05<br>3.66<br>6.13 | 2.46<br>2.95<br>3.66<br>5.85 | 2.35<br>2.79<br>3.43<br>5.41 | 2.27<br>2.67<br>3.27<br>5.10 | 2.22<br>2.61<br>3.18<br>4.94 | 2.18<br>2.55<br>3.09<br>4.77 | 2.13<br>2.49<br>3.00<br>4.60 |
| 15                   | 4.54<br>6.20<br>8.68<br>16.59 | 3.68<br>4.76<br>6.36<br>11.34 | 3.29<br>4.15<br>5.42<br>9.34  | 3.06<br>3.80<br>4.89<br>8.25 | 2.90<br>3.58<br>4.56<br>7.57 | 2.79<br>3.41<br>4.32<br>7.09 | 2.71<br>3.29<br>4.14<br>6.74 | 2.64<br>3.20<br>4.00<br>6.47 | 2.59<br>3.12<br>3.89<br>6.26 | 2.54<br>3.06<br>3.67<br>6.08 | 2.48<br>2.96<br>3.67<br>5.81 | 2.40<br>2.86<br>3.52<br>5.54 | 2.29<br>2.70<br>3.29<br>5.10 | 2.20<br>2.59<br>3.13<br>4.80 | 2.16<br>2.52<br>3.05<br>4.64 | 2.11<br>2.46<br>2.96<br>4.47 | 2.07<br>2.40<br>2.87<br>4.31 |
| 16                   | 4.49<br>6.12<br>8.53<br>16.12 | 3.63<br>4.69<br>6.23<br>10.97 | 3.24<br>4.08<br>5.29<br>9.01  | 3.01<br>3.73<br>4.77<br>7.94 | 2.85<br>3.50<br>4.44<br>7.27 | 2.74<br>3.34<br>4.20<br>6.80 | 2.66<br>3.22<br>4.03<br>6.46 | 2.59<br>3.12<br>3.89<br>6.19 | 2.54<br>3.05<br>3.78<br>5.98 | 2.49<br>2.99<br>3.69<br>5.81 | 2.42<br>2.89<br>3.55<br>5.55 | 2.35<br>2.79<br>3.41<br>5.27 | 2.24<br>2.63<br>3.18<br>4.85 | 2.15<br>2.51<br>3.02<br>4.54 | 2.11<br>2.45<br>2.93<br>4.39 | 2.06<br>2.38<br>2.84<br>4.23 | 2.01<br>2.32<br>2.75<br>4.06 |
| 17                   | 4.45<br>6.04<br>8.40<br>15.72 | 3.59<br>4.62<br>6.11<br>10.66 | 3.20<br>4.01<br>5.18<br>8.73  | 2.96<br>3.66<br>4.67<br>7.68 | 2.81<br>3.44<br>4.34<br>7.02 | 2.70<br>3.28<br>4.10<br>6.56 | 2.61<br>3.16<br>3.93<br>6.22 | 2.55<br>3.06<br>3.79<br>5.96 | 2.49<br>2.98<br>3.68<br>5.75 | 2.45<br>2.92<br>3.59<br>5.58 | 2.38<br>2.82<br>3.46<br>5.32 | 2.31<br>2.72<br>3.31<br>5.05 | 2.19<br>2.56<br>3.08<br>4.63 | 2.10<br>2.44<br>2.92<br>4.33 | 2.06<br>2.38<br>2.83<br>4.18 | 2.01<br>2.32<br>2.75<br>4.02 | 1.96<br>2.25<br>2.65<br>3.85 |
| 18                   | 4.41<br>5.98<br>8.29<br>15.38 | 3.55<br>4.56<br>6.01<br>10.39 | 3.16<br>3.95<br>5.09<br>8.49  | 2.93<br>3.61<br>4.58<br>7.46 | 2.77<br>3.38<br>4.25<br>6.81 | 2.66<br>3.22<br>4.01<br>6.35 | 2.58<br>3.10<br>3.84<br>6.02 | 2.51<br>3.01<br>3.71<br>5.76 | 2.46<br>2.93<br>3.60<br>5.56 | 2.41<br>2.87<br>3.51<br>5.39 | 2.34<br>2.77<br>3.37<br>5.13 | 2.27<br>2.67<br>3.23<br>4.87 | 2.15<br>2.50<br>3.00<br>4.45 | 2.06<br>2.38<br>2.84<br>4.15 | 2.02<br>2.32<br>2.75<br>4.00 | 1.97<br>2.26<br>2.66<br>3.84 | 1.92<br>2.19<br>2.57<br>3.67 |
| 19                   | 4.38<br>5.92<br>8.18<br>15.08 | 3.52<br>4.51<br>5.93<br>10.16 | 3.13<br>3.90<br>5.01<br>8.28  | 2.90<br>3.56<br>4.50<br>7.27 | 2.74<br>3.33<br>4.17<br>6.62 | 2.63<br>3.17<br>3.94<br>6.18 | 2.54<br>3.05<br>3.77<br>5.85 | 2.48<br>2.96<br>3.63<br>5.59 | 2.42<br>2.88<br>3.52<br>5.39 | 2.38<br>2.82<br>3.43<br>5.22 | 2.31<br>2.72<br>3.30<br>4.97 | 2.23<br>2.62<br>3.15<br>4.70 | 2.11<br>2.45<br>2.92<br>4.29 | 2.03<br>2.33<br>2.76<br>3.99 | 1.98<br>2.27<br>2.67<br>3.84 | 1.93<br>2.20<br>2.58<br>3.68 | 1.88<br>2.13<br>2.49<br>3.51 |
| 20                   | 4.35<br>5.87<br>8.10<br>14.82 | 3.49<br>4.46<br>5.85<br>9.95  | 3.10<br>3.86<br>4.94<br>8.10  | 2.87<br>3.51<br>4.43<br>7.10 | 2.71<br>3.29<br>4.10<br>6.46 | 2.60<br>3.13<br>3.87<br>6.02 | 2.51<br>3.01<br>3.70<br>5.69 | 2.45<br>2.91<br>3.56<br>5.44 | 2.39<br>2.84<br>3.46<br>5.24 | 2.35<br>2.77<br>3.37<br>5.08 | 2.28<br>2.68<br>3.23<br>4.82 | 2.20<br>2.57<br>3.09<br>4.56 | 2.08<br>2.41<br>2.86<br>4.15 | 1.99<br>2.29<br>2.69<br>3.86 | 1.95<br>2.22<br>2.61<br>3.70 | 1.90<br>2.16<br>2.52<br>3.54 | 1.84<br>2.09<br>2.42<br>3.38 |
| 21                   | 4.32<br>5.83<br>8.02<br>14.59 | 3.47<br>4.42<br>5.78<br>9.77  | 3.07<br>3.82<br>4.87<br>7.94  | 2.84<br>3.48<br>4.37<br>6.95 | 2.68<br>3.25<br>4.04<br>6.32 | 2.57<br>3.09<br>3.81<br>5.88 | 2.49<br>2.97<br>3.64<br>5.56 | 2.42<br>2.87<br>3.51<br>5.31 | 2.37<br>2.80<br>3.40<br>5.11 | 2.32<br>2.73<br>3.31<br>4.95 | 2.25<br>2.64<br>3.17<br>4.70 | 2.18<br>2.53<br>3.03<br>4.44 | 2.05<br>2.37<br>2.80<br>4.03 | 1.96<br>2.25<br>2.64<br>3.74 | 1.92<br>2.18<br>2.55<br>3.58 | 1.87<br>2.11<br>2.46<br>3.42 | 1.81<br>2.04<br>2.36<br>3.26 |
| 22                   | 4.30<br>5.79<br>7.95<br>14.38 | 3.44<br>4.38<br>5.72<br>9.61  | 3.05<br>3.78<br>4.82<br>7.80  | 2.82<br>3.44<br>4.31<br>6.81 | 2.66<br>3.22<br>3.99<br>6.19 | 2.55<br>3.05<br>3.76<br>5.76 | 2.46<br>2.93<br>3.59<br>5.44 | 2.40<br>2.84<br>3.45<br>5.19 | 2.34<br>2.76<br>3.35<br>4.99 | 2.30<br>2.70<br>3.26<br>4.83 | 2.23<br>2.60<br>3.12<br>4.58 | 2.15<br>2.50<br>2.98<br>4.33 | 2.03<br>2.33<br>2.75<br>3.92 | 1.94<br>2.21<br>2.58<br>3.63 | 1.89<br>2.14<br>2.50<br>3.48 | 1.84<br>2.08<br>2.40<br>3.32 | 1.78<br>2.00<br>2.31<br>3.15 |
| 23                   | 4.28<br>5.75<br>7.88<br>14.19 | 3.42<br>4.35<br>5.66<br>9.47  | 3.03<br>3.75<br>4.76<br>7.67  | 2.80<br>3.41<br>4.26<br>6.70 | 2.64<br>3.18<br>3.94<br>6.08 | 2.53<br>3.02<br>3.71<br>5.65 | 2.44<br>2.90<br>3.54<br>5.33 | 2.37<br>2.81<br>3.41<br>5.09 | 2.32<br>2.73<br>3.30<br>4.89 | 2.27<br>2.67<br>3.21<br>4.73 | 2.20<br>2.57<br>3.07<br>4.48 | 2.13<br>2.47<br>2.93<br>4.23 | 2.00<br>2.30<br>2.70<br>3.82 | 1.91<br>2.18<br>2.54<br>3.53 | 1.86<br>2.11<br>2.45<br>3.38 | 1.81<br>2.04<br>2.35<br>3.22 | 1.76<br>1.97<br>2.26<br>3.05 |
| 24                   | 4.26<br>5.72<br>7.82<br>14.03 | 3.40<br>4.32<br>5.61<br>9.34  | 3.01<br>3.72<br>4.72<br>7.55  | 2.78<br>3.38<br>4.22<br>6.59 | 2.62<br>3.15<br>3.90<br>5.98 | 2.51<br>2.99<br>3.67<br>5.55 | 2.42<br>2.87<br>3.50<br>5.23 | 2.36<br>2.78<br>3.36<br>4.99 | 2.30<br>2.70<br>3.26<br>4.80 | 2.25<br>2.64<br>3.17<br>4.64 | 2.18<br>2.54<br>3.03<br>4.39 | 2.11<br>2.44<br>2.89<br>4.14 | 1.98<br>2.27<br>2.66<br>3.74 | 1.89<br>2.15<br>2.49<br>3.45 | 1.84<br>2.08<br>2.40<br>3.29 | 1.79<br>2.01<br>2.31<br>3.14 | 1.73<br>1.94<br>2.21<br>2.97 |

## Table of F-Distribution (iii)

For each pair of values  $v_1$  and  $v_2$ , the table gives the values of

$F_{\alpha; v_1, v_2}$  with  $\alpha = 0.05, 0.025, 0.01$ , and  $0.001$ .



| $v_1 \backslash v_2$ | 1                             | 2                            | 3                            | 4                            | 5                            | 6                            | 7                            | 8                            | 9                            | 10                           | 12                           | 15                           | 24                           | 40                           | 60                           | 120                          | $\infty$                     |
|----------------------|-------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|
| 25                   | 4.24<br>5.69<br>7.77<br>13.88 | 3.39<br>4.29<br>5.57<br>9.22 | 2.99<br>3.69<br>4.68<br>7.45 | 2.76<br>3.35<br>4.18<br>6.49 | 2.60<br>3.13<br>3.86<br>5.89 | 2.49<br>2.97<br>3.63<br>5.46 | 2.40<br>2.85<br>3.46<br>5.15 | 2.34<br>2.75<br>3.32<br>4.91 | 2.28<br>2.68<br>3.22<br>4.71 | 2.24<br>2.61<br>3.13<br>4.56 | 2.16<br>2.51<br>2.99<br>4.31 | 2.09<br>2.41<br>2.85<br>4.06 | 1.96<br>2.24<br>2.62<br>3.66 | 1.87<br>2.12<br>2.45<br>3.37 | 1.82<br>2.05<br>2.36<br>3.22 | 1.77<br>1.98<br>2.27<br>3.06 | 1.71<br>1.91<br>2.17<br>2.89 |
| 26                   | 4.23<br>5.66<br>7.72<br>13.74 | 3.37<br>4.27<br>5.53<br>9.12 | 2.98<br>3.67<br>4.64<br>7.36 | 2.74<br>3.33<br>4.14<br>6.41 | 2.59<br>3.10<br>3.82<br>5.80 | 2.47<br>2.94<br>3.59<br>5.38 | 2.39<br>2.82<br>3.42<br>5.07 | 2.32<br>2.73<br>3.29<br>4.83 | 2.27<br>2.65<br>3.18<br>4.64 | 2.22<br>2.59<br>3.09<br>4.48 | 2.15<br>2.49<br>2.96<br>4.24 | 2.07<br>2.39<br>2.81<br>3.99 | 1.95<br>2.22<br>2.58<br>3.59 | 1.85<br>2.09<br>2.42<br>3.30 | 1.80<br>2.03<br>2.33<br>3.15 | 1.75<br>1.95<br>2.23<br>2.99 | 1.69<br>1.88<br>2.13<br>2.82 |
| 27                   | 4.21<br>5.63<br>7.68<br>13.61 | 3.35<br>4.24<br>5.49<br>9.02 | 2.96<br>3.65<br>4.60<br>7.27 | 2.73<br>3.31<br>4.11<br>6.33 | 2.57<br>3.08<br>3.78<br>5.73 | 2.46<br>2.92<br>3.56<br>5.31 | 2.37<br>2.80<br>3.39<br>5.00 | 2.31<br>2.71<br>3.26<br>4.76 | 2.25<br>2.63<br>3.15<br>4.57 | 2.20<br>2.57<br>3.06<br>4.41 | 2.13<br>2.47<br>2.93<br>4.17 | 2.06<br>2.36<br>2.78<br>3.92 | 1.93<br>2.19<br>2.55<br>3.52 | 1.84<br>2.07<br>2.38<br>3.23 | 1.79<br>2.00<br>2.29<br>3.08 | 1.73<br>1.93<br>2.20<br>2.92 | 1.67<br>1.85<br>2.10<br>2.75 |
| 28                   | 4.20<br>5.61<br>7.64<br>13.50 | 3.34<br>4.22<br>5.45<br>8.93 | 2.95<br>3.63<br>4.57<br>7.19 | 2.71<br>3.29<br>4.07<br>6.25 | 2.56<br>3.06<br>3.75<br>5.66 | 2.45<br>2.90<br>3.53<br>5.24 | 2.36<br>2.78<br>3.36<br>4.93 | 2.29<br>2.69<br>3.23<br>4.69 | 2.24<br>2.61<br>3.12<br>4.50 | 2.19<br>2.55<br>3.03<br>4.35 | 2.12<br>2.45<br>2.90<br>4.11 | 2.04<br>2.34<br>2.75<br>3.86 | 1.91<br>2.17<br>2.52<br>3.46 | 1.82<br>2.05<br>2.35<br>3.18 | 1.77<br>1.98<br>2.26<br>3.02 | 1.71<br>1.91<br>2.17<br>2.86 | 1.65<br>1.83<br>2.06<br>2.69 |
| 29                   | 4.18<br>5.59<br>7.60<br>13.39 | 3.33<br>4.20<br>5.42<br>8.85 | 2.93<br>3.61<br>4.54<br>7.12 | 2.70<br>3.27<br>4.04<br>6.19 | 2.55<br>3.04<br>3.73<br>5.59 | 2.43<br>2.88<br>3.50<br>5.18 | 2.35<br>2.76<br>3.33<br>4.87 | 2.28<br>2.67<br>3.20<br>4.64 | 2.22<br>2.59<br>3.09<br>4.45 | 2.18<br>2.53<br>3.00<br>4.29 | 2.10<br>2.43<br>2.87<br>4.05 | 2.03<br>2.32<br>2.73<br>3.80 | 1.90<br>2.15<br>2.49<br>3.41 | 1.81<br>2.03<br>2.33<br>3.12 | 1.75<br>1.96<br>2.23<br>2.97 | 1.70<br>1.89<br>2.14<br>2.81 | 1.64<br>1.81<br>2.03<br>2.64 |
| 30                   | 4.17<br>5.57<br>7.56<br>13.29 | 3.32<br>4.18<br>5.39<br>8.77 | 2.92<br>3.59<br>4.51<br>7.05 | 2.69<br>3.25<br>4.02<br>6.12 | 2.53<br>3.03<br>3.70<br>5.53 | 2.42<br>2.87<br>3.47<br>5.12 | 2.33<br>2.75<br>3.30<br>4.82 | 2.27<br>2.65<br>3.17<br>4.58 | 2.21<br>2.57<br>3.07<br>4.39 | 2.16<br>2.51<br>2.98<br>4.24 | 2.09<br>2.41<br>2.84<br>4.00 | 2.01<br>2.31<br>2.70<br>3.75 | 1.89<br>2.14<br>2.47<br>3.36 | 1.79<br>2.01<br>2.30<br>3.07 | 1.74<br>1.94<br>2.21<br>2.92 | 1.68<br>1.87<br>2.11<br>2.76 | 1.62<br>1.79<br>2.01<br>2.59 |
| 40                   | 4.08<br>5.42<br>7.31<br>12.61 | 3.23<br>4.05<br>5.18<br>8.25 | 2.84<br>3.46<br>4.31<br>6.59 | 2.61<br>3.13<br>3.83<br>5.70 | 2.45<br>2.90<br>3.51<br>5.13 | 2.34<br>2.74<br>3.29<br>4.73 | 2.25<br>2.62<br>3.12<br>4.44 | 2.18<br>2.53<br>2.99<br>4.21 | 2.12<br>2.45<br>2.89<br>4.02 | 2.08<br>2.39<br>2.80<br>3.87 | 2.00<br>2.29<br>2.66<br>3.64 | 1.92<br>2.18<br>2.52<br>3.40 | 1.79<br>2.01<br>2.29<br>3.01 | 1.69<br>1.88<br>2.11<br>2.73 | 1.64<br>1.80<br>2.02<br>2.57 | 1.58<br>1.72<br>1.92<br>2.41 | 1.51<br>1.64<br>1.80<br>2.23 |
| 60                   | 4.00<br>5.29<br>7.08<br>11.97 | 3.15<br>3.93<br>4.98<br>7.77 | 2.76<br>3.34<br>4.13<br>6.17 | 2.53<br>3.01<br>3.65<br>5.31 | 2.37<br>2.79<br>3.34<br>4.76 | 2.25<br>2.63<br>3.12<br>4.37 | 2.17<br>2.51<br>2.95<br>4.09 | 2.10<br>2.41<br>2.82<br>3.86 | 2.04<br>2.33<br>2.72<br>3.69 | 1.99<br>2.27<br>2.63<br>3.54 | 1.92<br>2.17<br>2.50<br>3.32 | 1.84<br>2.06<br>2.35<br>3.08 | 1.70<br>1.88<br>2.12<br>2.69 | 1.59<br>1.74<br>1.94<br>2.41 | 1.53<br>1.67<br>1.84<br>2.25 | 1.47<br>1.58<br>1.73<br>2.08 | 1.39<br>1.48<br>1.60<br>1.89 |
| 120                  | 3.92<br>5.15<br>6.85<br>11.38 | 3.07<br>3.80<br>4.79<br>7.32 | 2.68<br>3.23<br>3.95<br>5.78 | 2.45<br>2.89<br>3.48<br>4.95 | 2.29<br>2.67<br>3.17<br>4.42 | 2.18<br>2.52<br>2.96<br>4.04 | 2.09<br>2.39<br>2.79<br>3.77 | 2.02<br>2.30<br>2.66<br>3.55 | 1.96<br>2.22<br>2.56<br>3.38 | 1.91<br>2.16<br>2.47<br>3.24 | 1.83<br>2.05<br>2.34<br>3.02 | 1.75<br>1.94<br>2.19<br>2.78 | 1.61<br>1.76<br>1.95<br>2.40 | 1.50<br>1.61<br>1.76<br>2.11 | 1.43<br>1.53<br>1.66<br>1.95 | 1.35<br>1.43<br>1.53<br>1.76 | 1.25<br>1.31<br>1.38<br>1.54 |
| $\infty$             | 3.84<br>5.02<br>6.63<br>10.83 | 3.00<br>3.69<br>4.61<br>6.91 | 2.60<br>3.12<br>3.78<br>5.42 | 2.37<br>2.79<br>3.32<br>4.62 | 2.21<br>2.57<br>3.02<br>4.10 | 2.10<br>2.41<br>2.80<br>3.74 | 2.01<br>2.29<br>2.64<br>3.47 | 1.94<br>2.19<br>2.51<br>3.27 | 1.88<br>2.11<br>2.41<br>3.10 | 1.83<br>2.05<br>2.32<br>2.96 | 1.75<br>1.94<br>2.18<br>2.74 | 1.67<br>1.83<br>2.04<br>2.51 | 1.52<br>1.64<br>1.79<br>2.13 | 1.39<br>1.48<br>1.59<br>1.84 | 1.32<br>1.39<br>1.47<br>1.66 | 1.22<br>1.27<br>1.32<br>1.45 | 1.00<br>1.00<br>1.00<br>1.00 |