## t-distribution

|   | Confidence Level      |                |               |               |               |               |               |                  |                  |                  |
|---|-----------------------|----------------|---------------|---------------|---------------|---------------|---------------|------------------|------------------|------------------|
|   | 60%                   | 70%            | 80%           | 85%           | 90%           | 95%           | 98%           | 99%              | 99.8%            | 99.9%            |
|   | Level of Significance |                |               |               |               |               |               |                  |                  |                  |
| 2 Tailed                                | 0.40                  | 0.30           | 0.20          | 0.15          | 0.10          | 0.05          | 0.02          | 0.01             | 0.002            | 0.001            |
| 1 Tailed                                | 0.20                  | 0.30           | 0.20          | 0.15          | 0.10          | 0.025         | 0.02          | 0.005            | 0.002            | 0.0005           |
| 1 Iunica                                | 0.20                  | 0.10           | 0.10          | 0.010         | 0.00          | 0.020         | 0.01          | 0.000            | 0.001            | 0.0000           |
| df                                      |                       |                |               |               |               |               |               |                  |                  |                  |
| 1                                       | 1.376                 | 1.963          | 3.133         | 4.195         | 6.320         | 12.69         | 31.81         | 63.67            |                  |                  |
| 2                                       | 1.060                 | 1.385          | 1.883         | 2.278         | 2.912         | 4.271         | 6.816         | 9.520            | 19.65            | 26.30            |
| 3                                       | 0.978                 | 1.250          | 1.637         | 1.924         | 2.352         | 3.179         | 4.525         | 5.797            | 9.937            | 12.39            |
| 4                                       | 0.941                 | 1.190          | 1.533         | 1.778         | 2.132         | 2.776         | 3.744         | 4.596            | 7.115            | 8.499            |
| 5                                       | 0.919                 | 1.156          | 1.476         | 1.699         | 2.015         | 2.570         | 3.365         | 4.030            | 5.876            | 6.835            |
| 6                                       | 0.906                 | 1.134          | 1.440         | 1.650         | 1.943 $1.895$ | 2.447         | 3.143 $2.999$ | 3.707            | 5.201            | 5.946            |
| 7<br>8                                  | 0.896 $0.889$         | 1.119<br>1.108 | 1.415 $1.397$ | 1.617 $1.592$ | 1.860         | 2.365 $2.306$ | 2.999 $2.897$ | $3.500 \\ 3.356$ | 4.783 $4.500$    | $5.403 \\ 5.039$ |
| 9                                       | 0.883                 | 1.100          | 1.383         | 1.592 $1.574$ | 1.833         | 2.360 $2.262$ | 2.822         | 3.250            | 4.297            | 4.780            |
| 10                                      | 0.879                 | 1.093          | 1.372         | 1.559         | 1.813         | 2.228         | 2.764         | 3.170            | 4.144            | 4.586            |
| 11                                      | 0.875                 | 1.088          | 1.363         | 1.548         | 1.796         | 2.201         | 2.719         | 3.106            | 4.025            | 4.437            |
| 12                                      | 0.873                 | 1.083          | 1.356         | 1.538         | 1.782         | 2.179         | 2.682         | 3.055            | 3.930            | 4.318            |
| 13                                      | 0.870                 | 1.079          | 1.350         | 1.530         | 1.771         | 2.160         | 2.651         | 3.013            | 3.852            | 4.221            |
| 14                                      | 0.868                 | 1.076          | 1.345         | 1.523         | 1.761         | 2.145         | 2.625         | 2.977            | 3.788            | 4.141            |
| 15                                      | 0.866                 | 1.074          | 1.341         | 1.517         | 1.753         | 2.131         | 2.603         | 2.947            | 3.733            | 4.073            |
| 16                                      | 0.865                 | 1.071          | 1.337         | 1.512         | 1.746         | 2.120         | 2.584         | 2.921            | 3.687            | 4.015            |
| 17                                      | 0.863                 | 1.069          | 1.333         | 1.508         | 1.740         | 2.110         | 2.567         | 2.899            | 3.646            | 3.965            |
| 18                                      | 0.862                 | 1.067          | 1.330         | 1.504         | 1.734         | 2.101         | 2.553         | 2.879            | 3.611            | 3.922            |
| 19                                      | 0.861                 | 1.066          | 1.328         | 1.500         | 1.729         | 2.093         | 2.540         | 2.861            | 3.580            | 3.884            |
| $\begin{array}{c} 20 \\ 21 \end{array}$ | $0.860 \\ 0.859$      | 1.064 $1.063$  | 1.325 $1.323$ | 1.497 $1.494$ | 1.725 $1.721$ | 2.086 $2.080$ | 2.529 $2.518$ | 2.846 $2.832$    | $3.552 \\ 3.528$ | $3.850 \\ 3.820$ |
| $\frac{21}{22}$                         | 0.858                 | 1.063 $1.061$  | 1.323 $1.321$ | 1.494 $1.492$ | 1.721 $1.717$ | 2.030 $2.074$ | 2.518 $2.509$ | 2.819            | 3.505            | 3.792            |
| 23                                      | 0.857                 | 1.060          | 1.319         | 1.489         | 1.714         | 2.069         | 2.500         | 2.808            | 3.485            | 3.768            |
| $\frac{23}{24}$                         | 0.857                 | 1.059          | 1.318         | 1.487         | 1.711         | 2.064         | 2.493         | 2.797            | 3.467            | 3.746            |
| 25                                      | 0.856                 | 1.058          | 1.316         | 1.485         | 1.708         | 2.060         | 2.486         | 2.788            | 3.451            | 3.725            |
| 26                                      | 0.856                 | 1.058          | 1.315         | 1.483         | 1.706         | 2.056         | 2.479         |                  | 3.435            | 3.707            |
| 27                                      | 0.855                 | 1.057          | 1.314         | 1.482         | 1.703         | 2.052         | 2.473         | 2.771            | 3.421            | 3.690            |
| 28                                      | 0.855                 | 1.056          | 1.313         | 1.480         | 1.701         | 2.048         | 2.468         | 2.764            | 3.409            | 3.674            |
| 29                                      | 0.854                 | 1.055          | 1.311         | 1.479         | 1.699         | 2.045         | 2.463         | 2.757            | 3.397            | 3.660            |
| 30                                      | 0.854                 | 1.055          | 1.310         | 1.477         | 1.697         | 2.042         | 2.458         | 2.750            | 3.386            | 3.646            |
| 40                                      | 0.851                 | 1.050          | 1.303         | 1.468         | 1.684         | 2.021         | 2.424         | 2.705            | 3.307            | 3.551            |
| 50                                      | 0.849                 | 1.047          | 1.299         | 1.462         | 1.676         | 2.009         | 2.404         | 2.678            | 3.262            | 3.496            |
| 60<br>70                                | 0.848                 | 1.045 $1.044$  | 1.296         | 1.458         | 1.671         | 2.000 $1.994$ | 2.391 $2.381$ | 2.661            | 3.232            | $3.460 \\ 3.435$ |
| 70<br>80                                | 0.847 $0.846$         | 1.044 $1.043$  | 1.294 $1.292$ | 1.456 $1.453$ | 1.667 $1.664$ | 1.994 $1.990$ | 2.374         | 2.648 $2.639$    | 3.211 $3.196$    | 3.435 $3.417$    |
| 90                                      | 0.846                 | 1.043 $1.042$  | 1.292 $1.291$ | 1.453 $1.452$ | 1.662         | 1.980 $1.987$ | 2.369         | 2.632            | 3.184            | 3.417 $3.402$    |
| 100                                     | 0.845                 | 1.042          | 1.291         | 1.452 $1.451$ | 1.660         | 1.984         | 2.365         | 2.626            | 3.174            | 3.391            |
|   |                       | - <del></del>  |               |               | 200           |               | 300           | 3-3              | , -              |                  |
| $\infty$                                | 0.842                 | 1.036          | 1.282         | 1.440         | 1.645         | 1.960         | 2.327         | 2.576            | 3.091            | 3.291            |