

Tabella D.5 Funzione di ripartizione della *t* di Student\*

$$F(t) = \int_{-\infty}^t \frac{\Gamma\left(\frac{n+1}{2}\right)}{\Gamma\left(\frac{n}{2}\right)\sqrt{\pi}\left(1+\frac{x^2}{n}\right)^{\frac{n+1}{2}}} dx$$

$F$ $n$	.75	.90	.95	.975	.99	.995	.9995
1	1.000	3.078	6.314	12.706	31.821	63.657	636.619
2	.816	1.886	2.920	4.303	6.965	9.925	31.598
3	.765	1.638	2.353	3.182	4.541	5.841	12.941
4	.741	1.533	2.132	2.776	3.747	4.604	8.610
5	.727	1.476	2.015	2.571	3.365	4.032	6.859
6	.718	1.440	1.943	2.447	3.143	3.707	5.959
7	.711	1.415	1.895	2.365	2.998	3.499	5.405
8	.706	1.397	1.860	2.306	2.896	3.355	5.041
9	.703	1.383	1.833	2.262	2.821	3.250	4.781
10	.700	1.372	1.812	2.228	2.764	3.169	4.587
11	.697	1.363	1.796	2.201	2.718	3.106	4.437
12	.695	1.356	1.782	2.179	2.681	3.055	4.318
13	.694	1.350	1.771	2.160	2.650	3.012	4.221
14	.692	1.345	1.761	2.145	2.624	2.977	4.140
15	.691	1.341	1.753	2.131	2.602	2.947	4.073
16	.690	1.337	1.746	2.120	2.583	2.921	4.015
17	.689	1.333	1.740	2.110	2.567	2.898	3.965
18	.688	1.330	1.734	2.101	2.552	2.878	3.922
19	.688	1.328	1.729	2.093	2.539	2.861	3.883
20	.687	1.325	1.725	2.086	2.528	2.845	3.850
21	.686	1.323	1.721	2.080	2.518	2.831	3.819
22	.686	1.321	1.717	2.074	2.508	2.819	3.792
23	.685	1.319	1.714	2.069	2.500	2.807	3.767
24	.685	1.318	1.711	2.064	2.492	2.797	3.745
25	.684	1.316	1.708	2.060	2.485	2.787	3.725
26	.684	1.315	1.706	2.056	2.479	2.779	3.707
27	.684	1.314	1.703	2.052	2.473	2.771	3.690
28	.683	1.313	1.701	2.048	2.467	2.763	3.674
29	.683	1.311	1.699	2.045	2.462	2.756	3.659
30	.683	1.310	1.697	2.042	2.457	2.750	3.646
40	.681	1.303	1.684	2.021	2.423	2.704	3.551
60	.679	1.296	1.671	2.000	2.390	2.660	3.460
120	.677	1.289	1.658	1.980	2.358	2.617	3.373
$\infty$	.674	1.282	1.645	1.960	2.326	2.576	3.291

\*R. A. Fisher, Frank Yates, "Statistical Tables", Oliver & Boyd, Ltd, 1938.

Tabella D.5 Funzione di ripartizione della  $F'$

$$G(F) = \int_0^F \frac{\Gamma\left(\frac{m+n}{2}\right) m^{m/2} n^{n/2} x^{m+n-2} (n+mx)^{-(m+n)/2} dx}{\Gamma\left(\frac{m}{2}\right)\Gamma\left(\frac{n}{2}\right)}$$

G	n	m	1	2	3	4	5	6	7	8	9	10	12	15	20	30	60	120	∞	
.90	1	.95	19.9	49.5	51.6	55.8	57.2	58.2	58.9	59.4	59.9	60.2	60.7	61.2	61.7	62.3	62.8	63.1	63.3	
.95			16.1	20.0	21.6	22.5	23.0	23.4	23.7	23.9	24.1	24.2	24.3	24.4	24.6	24.8	25.0	25.2	25.3	25.4
.975			6.48	8.00	8.64	9.00	9.22	9.37	9.48	9.57	9.63	9.69	9.77	9.83	9.85	9.93	10.00	10.10	10.10	10.20
.99			4.050	5.000	5.400	5.620	5.750	5.860	5.950	6.020	6.060	6.110	6.160	6.210	6.260	6.310	6.360	6.410	6.440	6.470
.995			16.200	20.000	21.600	22.500	23.100	23.400	23.700	23.900	24.100	24.200	24.400	24.600	24.800	25.000	25.200	25.400	25.500	25.500
.90	2	.95	8.53	9.00	9.16	9.24	9.29	9.33	9.35	9.37	9.38	9.39	9.41	9.42	9.44	9.46	9.47	9.48	9.49	
.95			18.3	19.0	19.2	19.2	19.3	19.3	19.4	19.4	19.4	19.4	19.4	19.4	19.4	19.5	19.5	19.5	19.5	19.5
.975			18.3	39.0	39.2	39.2	39.3	39.3	39.4	39.4	39.4	39.4	39.4	39.4	39.4	39.4	39.4	39.5	39.5	39.5
.99			98.3	99.0	99.2	99.2	99.3	99.3	99.4	99.4	99.4	99.4	99.4	99.4	99.4	99.4	99.5	99.5	99.5	99.5
.995			199	199	199	199	199	199	199	199	199	199	199	199	199	199	199	199	199	199
.90	3	.95	5.34	5.46	5.39	5.34	5.31	5.28	5.27	5.25	5.24	5.23	5.22	5.22	5.20	5.18	5.17	5.15	5.14	
.95			10.1	9.55	9.28	9.12	9.01	8.94	8.89	8.85	8.81	8.79	8.74	8.70	8.66	8.62	8.57	8.53	8.53	
.975			17.4	16.0	15.4	15.1	14.9	14.7	14.6	14.5	14.3	14.4	14.3	14.3	14.2	14.1	14.0	13.9	13.9	
.99			34.1	30.8	29.3	28.7	28.2	27.9	27.7	27.5	27.3	27.2	27.1	26.9	26.7	26.5	26.3	26.2	26.1	
.995			55.6	49.8	47.5	46.2	45.4	44.8	44.4	44.1	43.9	43.7	43.4	43.1	42.8	42.5	42.1	42.0	41.8	
.90	4	.95	4.54	4.32	4.19	4.11	4.05	4.01	3.98	3.95	3.93	3.92	3.90	3.87	3.84	3.82	3.79	3.78		
.95			7.71	6.94	6.59	6.39	6.26	6.16	6.09	6.04	6.00	5.96	5.91	5.86	5.80	5.73	5.69	5.66		
.975			12.2	10.6	9.98	9.60	9.36	9.20	9.07	8.98	8.90	8.84	8.75	8.66	8.56	8.48	8.36	8.31		
.99			21.2	18.0	16.7	16.0	15.5	15.2	15.0	14.8	14.7	14.5	14.4	14.2	14.0	13.8	13.7			
.995			31.3	26.3	24.3	23.2	22.5	22.0	21.6	21.4	21.1	21.0	20.7	20.4	20.2	19.9	19.6			
.90	5	.95	4.06	3.78	3.62	3.52	3.45	3.40	3.37	3.34	3.32	3.30	3.27	3.24	3.21	3.17	3.14			
.95			6.61	5.79	5.41	5.19	5.05	4.95	4.88	4.82	4.77	4.74	4.68	4.62	4.56	4.50	4.43			
.975			10.0	8.43	7.76	7.39	7.15	6.98	6.85	6.76	6.68	6.62	6.52	6.43	6.33	6.23	6.12			
.99			16.3	13.3	12.1	11.4	11.0	10.7	10.5	10.3	10.2	10.1	9.89	9.72	9.53	9.38				
.995			22.8	18.3	16.5	15.6	14.9	14.5	14.2	14.0	13.8	13.6	13.4	13.1	12.9	12.7				
.90	6	.95	3.78	3.46	3.29	3.18	3.11	3.05	3.01	2.98	2.96	2.94	2.90	2.87	2.84	2.80				
.95			5.99	5.14	4.76	4.53	4.39	4.28	4.21	4.15	4.10	4.06	4.00	3.94	3.87	3.81				
.975			8.81	7.26	6.60	6.23	5.99	5.82	5.70	5.60	5.52	5.46	5.37	5.27	5.17	5.07				
.99			13.7	10.9	9.78	9.15	8.75	8.47	8.26	8.10	7.98	7.87	7.72	7.56	7.40	7.23				
.995			18.6	14.5	12.9	12.0	11.5	11.1	10.8	10.6	10.4	10.2	10.0	9.81	9.59	9.36				
.90	7	.95	3.59	3.26	3.07	2.96	2.88	2.83	2.78	2.75	2.72	2.70	2.67	2.63	2.59					
.95			5.59	4.74	4.35	4.12	3.97	3.87	3.79	3.73	3.68	3.64	3.57	3.51	3.44					
.975			8.07	6.54	5.89	5.52	5.29	5.12	4.99	4.90	4.82	4.76	4.67	4.57	4.47					
.99			12.2	9.55	8.45	7.85	7.46	7.19	6.99	6.84	6.72	6.62	6.47	6.31	6.16					
.995			16.2	12.4	10.9	10.1	9.52	9.16	8.89	8.68	8.51	8.38	8.18	7.97	7.75					
.90	8	.95	3.46	3.11	2.92	2.81	2.73	2.67	2.62	2.59	2.56	2.54	2.50	2.46						
.95			5.32	4.46	4.07	3.84	3.69	3.58	3.50	3.44	3.39	3.35	3.28	3.22						
.975			7.37	6.06	5.42	5.05	4.82	4.63	4.53	4.43	4.36	4.30	4.20	4.10						
.99			11.3	8.65	7.39	7.01	6.63	6.37	6.18	6.03	5.91	5.81	5.67	5.52						
.995			14.7	11.0	9.60	8.81	8.30	7.95	7.69	7.50	7.34	7.21	7.01	6.81						
.90	9	.95	3.16	3.01	2.81	2.69	2.61	2.55	2.51	2.47	2.44	2.42	2.38	2.34						
.95			5.12	4.36	3.86	3.61	3.48	3.37	3.29	3.23	3.18	3.14	3.07	3.01						
.975			7.21	5.71	5.08	4.72	4.48	4.32	4.20	4.10	4.03	3.96	3.87	3.77						
.99			10.6	8.02	6.99	6.42	6.06	5.80	5.61	5.47	5.35	5.26	5.11	4.96						
.995			13.6	10.1	8.72	7.96	7.47	7.13	6.88	6.69	6.54	6.42	6.23	6.03						
.90	10	.95	3.29	2.92	2.73	2.61	2.52	2.46	2.41	2.38	2.35	2.32	2.28	2.24						
.95			4.96	4.10	3.71	3.48	3.33	3.22	3.14	3.07	3.02	2.98	2.91	2.84						
.975			6.94	5.46	4.83	4.47	4.24	4.07	3.95	3.85	3.78	3.72	3.62	3.52						
.99			10.0	7.56	6.55	5.99	5.64	5.39	5.20	5.06	4.94	4.85	4.71	4.56						
.995			12.8	9.41	8.08	7.34	6.87	6.54	6.30	6.12	5.97	5.85	5.66	5.47						
.90	12	.95	3.16	2.81	2.61	2.48	2.39	2.33	2.28	2.24	2.21	2.19	2.15	2.10						
.95			4.75	3.89	3.49	3.26	3.11	3.00	2.91	2.85	2.80	2.75	2.69	2.62						
.975			6.55	5.10	4.47	4.12	3.89	3.73	3.61	3.51	3.44	3.37	3.28	3.18						
.99			9.33	6.93	5.95	5.41	5.06	4.82	4.64	4.50	4.39	4.30	4.16	4.01						
.995			11.8	8.51	7.23	6.52	6.07	5.76	5.52	5.35	5.20	5.09	4.91	4.72						
.90	15	.95	3.07	2.70	2.49	2.36	2.27	2.21	2.16	2.12	2.09	2.06	2.02	1.97						
.95			4.34	3.68	3.29	3.06	2.90	2.79	2.71	2.64	2.59	2.54	2.48	2.40						
.975			6.20	4.77	4.15	3.80	3.58	3.41	3.29	3.20	3.12	3.06	2.96	2.86						
.99			8.68	6.36	5.42	4.89	4.56	4.32	4.14	4.00	3.89	3.80	3.67	3.52						
.995			10.8	7.70	6.48	5.80	5.37	5.07	4.85	4.67	4.54	4.42	4.25	4.07						
.90	20	.95	2.97	2.59	2.38	2.25	2.16	2.09	2.04	2.00	1.96	1.94	1.89	1.84						
.95			4.35	3.49	3.10	2.87	2.71	2.60	2.51	2.45	2.39	2.35	2.28	2.20						
.975			5.87	4.46	3.86	3.51	3.29	3.13	3.01	2.91	2.84	2.77	2.68	2.57						
.99			8.10	5.85	4.94	4.43	4.10	3.87	3.70	3.56	3.46	3.37	3.23	3.09						
.995			9.94	6.99	5.82	5.17	4.76	4.47	4.26	4.09	3.96	3.85	3.68	3.50						
.90	30	.95	2.88	2.49	2.28	2.14	2.05	1.98	1.93	1.88	1.85	1.82	1.77	1.72						
.95			4.17	3.32	2.92	2.69	2.53	2.42	2.33	2.27	2.21	2.16	2.09	2.01						
.975			5.57	4.18	3.59	3.25	3.03	2.87	2.75	2.65	2.57	2.51	2.41	2.31						
.99			7.56	5.39	4.51	4.02	3.70	3.47	3.30	3.17	3.07	2.98	2.84	2.70						
.995			9.18	6.35	5.24	4.62	4.23	3.93	3.74	3.58	3.45	3.34	3.18	3.01						
.90	40	.95	2.79	2.39	2.18	2.04	1.95	1.87	1.82	1.77	1.74	1.71	1.66	1.60						
.95			4.00	3.15	2.76	2.53	2.37	2.25	2.17	2.10	2.04	1.99	1.92	1.84						
.975			5.29	3.93	3.34	3.01	2.79	2.63	2.51	2.41	2.33	2.27	2.17	2.06						
.99			7.08	4.98	4.11	3.65	3.34	3.12	2.95	2.82	2.72	2.63	2.50	2.35						
.995			8.49	5.80	4.73	4.14	3.76	3.49	3.29	3.13	3.01	2.90	2.74	2.57						
.90	120	.95	2.75	2.35	2.13	1.99	1.90	1.82	1.77	1.72	1.68	1.65	1.60	1.54						
.95																				

Tabella Z.3 Funzione di ripartizione chi-quadrato\*

$$F(u) = \int_0^u \frac{x^{n-2} e^{-x/2} dx}{2^{n/2} \Gamma(n/2)}$$

n	.005	.010	.025	.050	.100	.250	.500	.750	.900	.950	.975	.990	.995
1	.04393	.07157	.10982	.15393	.2158	.302	.455	.632	.871	1.284	1.963	2.706	3.841
2	.01000	.02010	.03060	.04080	.05110	.06150	.07200	.08260	.09330	.10410	.11500	.12600	.13710
3	.07171	.11500	.17534	.24450	.32179	.40714	.50057	.60207	.71172	.82961	.95584	1.09051	1.23371
4	.207	.297	.384	.467	.547	.624	.700	.774	.847	.919	.989	1.058	1.126
5	.412	.554	.691	.824	.953	1.079	1.202	1.322	1.439	1.553	1.664	1.772	1.877
6	.676	.872	1.064	1.242	1.407	1.560	1.701	1.839	1.974	2.106	2.235	2.361	2.484
7	.989	1.24	1.49	1.71	1.91	2.10	2.28	2.45	2.61	2.76	2.91	3.05	3.19
8	1.34	1.65	1.91	2.13	2.32	2.49	2.65	2.80	2.94	3.08	3.21	3.34	3.47
9	1.73	2.09	2.30	2.47	2.62	2.76	2.89	3.01	3.13	3.24	3.35	3.45	3.55
10	2.16	2.56	2.71	2.84	2.96	3.07	3.17	3.26	3.34	3.42	3.49	3.56	3.62
11	2.60	3.05	3.16	3.25	3.33	3.40	3.46	3.51	3.55	3.59	3.62	3.65	3.68
12	3.07	3.57	3.64	3.69	3.73	3.76	3.79	3.81	3.83	3.85	3.86	3.87	3.88
13	3.57	4.11	4.14	4.16	4.17	4.18	4.19	4.20	4.20	4.21	4.21	4.21	4.21
14	4.07	4.66	4.65	4.64	4.63	4.62	4.61	4.60	4.59	4.58	4.57	4.56	4.55
15	4.60	5.23	5.19	5.15	5.11	5.07	5.03	5.00	4.96	4.92	4.88	4.84	4.80
16	5.14	5.81	5.74	5.68	5.62	5.56	5.50	5.44	5.38	5.32	5.26	5.20	5.14
17	5.70	6.41	6.31	6.23	6.15	6.07	5.99	5.91	5.83	5.75	5.67	5.59	5.51
18	6.26	7.01	6.88	6.78	6.68	6.58	6.48	6.38	6.28	6.18	6.08	5.98	5.88
19	6.84	7.63	7.48	7.36	7.24	7.12	6.99	6.86	6.73	6.60	6.47	6.34	6.21
20	7.43	8.26	8.09	7.95	7.81	7.67	7.53	7.39	7.25	7.10	6.96	6.81	6.66
21	8.03	8.90	8.71	8.55	8.39	8.23	8.07	7.91	7.74	7.57	7.40	7.23	7.06
22	8.64	9.54	9.33	9.15	8.97	8.79	8.61	8.43	8.24	8.05	7.86	7.67	7.48
23	9.26	10.2	10.0	9.80	9.60	9.39	9.18	8.97	8.76	8.54	8.32	8.10	7.88
24	9.89	10.9	10.7	10.4	10.1	9.88	9.64	9.39	9.14	8.89	8.63	8.37	8.11
25	10.5	11.5	11.3	11.0	10.7	10.4	10.1	9.84	9.56	9.28	9.00	8.72	8.44
26	11.2	12.2	12.0	11.6	11.3	11.0	10.7	10.4	10.1	9.81	9.52	9.23	8.94
27	11.8	12.9	12.7	12.3	12.0	11.7	11.4	11.1	10.8	10.5	10.2	9.91	9.61
28	12.5	13.6	13.4	13.0	12.7	12.4	12.1	11.8	11.5	11.2	10.9	10.6	10.3
29	13.1	14.3	14.1	13.7	13.4	13.1	12.8	12.5	12.2	11.9	11.6	11.3	11.0
30	13.8	15.0	14.8	14.4	14.1	13.8	13.5	13.2	12.9	12.6	12.3	12.0	11.7

\* Per gentile concessione di Catherine M. Thompson, *Biometrika*, vol. 32 (1941).

$$\Phi(x) = \frac{1}{\sqrt{2\pi}} \int_{-\infty}^x e^{-t^2/2} dt$$

x	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
0	.5000	.5040	.5080	.5120	.5160	.5199	.5239	.5279	.5319	.5359
1	.5398	.5438	.5478	.5517	.5557	.5596	.5636	.5675	.5714	.5753
2	.5793	.5832	.5871	.5910	.5948	.5987	.6026	.6064	.6103	.6141
3	.6179	.6217	.6255	.6293	.6331	.6368	.6406	.6443	.6480	.6517
4	.6554	.6591	.6628	.6664	.6700	.6736	.6772	.6808	.6844	.6879
5	.6915	.6950	.6985	.7019	.7054	.7088	.7123	.7157	.7190	.7224
6	.7257	.7291	.7324	.7357	.7389	.7422	.7454	.7486	.7517	.7549
7	.7580	.7611	.7642	.7673	.7704	.7734	.7764	.7794	.7823	.7852
8	.7881	.7910	.7939	.7967	.7995	.8023	.8051	.8078	.8106	.8133
9	.8159	.8186	.8212	.8238	.8264	.8289	.8315	.8340	.8365	.8389
1.0	.8413	.8438	.8461	.8485	.8508	.8531	.8554	.8577	.8599	.8621
1.1	.8643	.8665	.8686	.8708	.8729	.8749	.8770	.8790	.8810	.8830
1.2	.8849	.8869	.8888	.8907	.8925	.8944	.8962	.8980	.8997	.9015
1.3	.9032	.9049	.9066	.9082	.9099	.9115	.9131	.9147	.9162	.9177
1.4	.9192	.9207	.9222	.9236	.9251	.9265	.9279	.9292	.9306	.9319
1.5	.9332	.9345	.9357	.9370	.9382	.9394	.9406	.9418	.9429	.9441
1.6	.9452	.9463	.9474	.9484	.9495	.9505	.9515	.9525	.9535	.9545
1.7	.9554	.9564	.9573	.9582	.9591	.9599	.9608	.9616	.9625	.9633
1.8	.9641	.9649	.9656	.9664	.9671	.9678	.9686	.9693	.9699	.9706
1.9	.9713	.9719	.9726	.9732	.9738	.9744	.9750	.9756	.9761	.9767
2.0	.9772	.9778	.9783	.9788	.9793	.9798	.9803	.9808	.9812	.9817
2.1	.9821	.9826	.9830	.9834	.9838	.9842	.9846	.9850	.9854	.9857
2.2	.9861	.9864	.9868	.9871	.9875	.9878	.9881	.9884	.9887	.9890
2.3	.9893	.9895	.9898	.9901	.9904	.9906	.9909	.9911	.9913	.9916
2.4	.9918	.9920	.9922	.9925	.9927	.9929	.9931	.9932	.9934	.9936
2.5	.9938	.9940	.9941	.9943	.9945	.9946	.9948	.9949	.9951	.9952
2.6	.9953	.9955	.9956	.9957	.9959	.9960	.9961	.9962	.9963	.9964
2.7	.9965	.9966	.9967	.9968	.9969	.9970	.9971	.9972	.9973	.9974
2.8	.9974	.9975	.9976	.9977	.9977	.9978	.9979	.9979	.9980	.9981
2.9	.9981	.9982	.9982	.9983	.9984	.9984	.9985	.9985	.9986	.9986
3.0	.9987	.9987	.9987	.9988	.9988	.9989	.9989	.9989	.9990	.9990
3.1	.9990	.9991	.9991	.9991	.9992	.9992	.9992	.9992	.9993	.9993
3.2	.9993	.9993	.9994	.9994	.9994	.9994	.9995	.9995	.9995	.9995
3.3	.9995	.9995	.9996	.9996	.9996	.9996	.9996	.9996	.9997	.9997
3.4	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9998
x	1.282	1.645	1.960	2.326	2.576	3.090	3.291	3.891	4.417	
Φ(x)	.90	.95	.975	.99	.995	.999	.9995	.99995	.999995	
2[1 - Φ(x)]	.20	.10	.05	.02	.01	.002	.001	.0001	.00001	

