Základní tabulky potřebné pro výpočet příkladů na přednáškách z Biostatistiky
(převzato z různých zdrojů)

Kritické hodnoty Spearmanova korelačního koeficientu

n	α		n	α		n	α	
	0,05	0,01		0,05	0,01		0,05	0,01
			11	0,6091	0,7545	21	0,4351	0,5545
			12	0,5804	0,7273	22	0,4241	0,5426
			13	0,5549	0,6978	23	0,4150	0,5306
			14	0,5341	0,6747	24	0,4061	0,5200
5	0,9000	-	15	0,5179	0,6536	25	0,3977	0,5100
6	0,8286	0,9429	16	0,5000	0,6324	26	0,3894	0,5002
7	0,7450	0,8929	17	0,4853	0,6152	27	0,3822	0,4915
8	0,6905	0,8571	18	0,4716	0,5975	28	0,3749	0,4828
9	0,6833	0,8167	19	0,4579	0,5825	29	0,3685	0,4744
10	0,6364	0,7818	20	0,4451	0,5684	30	0,3620	0,4665

95% kvantily *F* rozdělení o ν_1 (čitatel) a ν_2 (jmenovatel) stupních volnosti

$F_{0,95}(\nu_1, \nu_2)$	ν_1							
ν_2	1	2	3	4	5	6	8	10
1	161,45	199,50	215,71	224,58	230,16	233,99	238,88	241,88
2	18,51	19,00	19,16	19,25	19,30	19,33	19,37	19,40
3	10,13	9,55	9,28	9,12	9,01	8,94	8,85	8,79
4	7,71	6,94	6,59	6,39	6,26	6,16	6,04	5,96
5	6,61	5,79	5,41	5,19	5,05	4,95	4,82	4,74
6	5,99	5,14	4,76	4,53	4,39	4,28	4,15	4,06
7	5,59	4,74	4,35	4,12	3,97	3,87	3,73	3,64
8	5,32	4,46	4,07	3,84	3,69	3,58	3,44	3,35
9	5,12	4,26	3,86	3,63	3,48	3,37	3,23	3,14
10	4,96	4,10	3,71	3,48	3,33	3,22	3,07	2,98
11	4,84	3,98	3,59	3,36	3,20	3,09	2,95	2,85
12	4,75	3,89	3,49	3,26	3,11	3,00	2,85	2,75
13	4,67	3,81	3,41	3,18	3,03	2,92	2,77	2,67
14	4,60	3,74	3,34	3,11	2,96	2,85	2,70	2,60
15	4,54	3,68	3,29	3,06	2,90	2,79	2,64	2,54
16	4,49	3,63	3,24	3,01	2,85	2,74	2,59	2,49
17	4,45	3,59	3,20	2,96	2,81	2,70	2,55	2,45
18	4,41	3,55	3,16	2,93	2,77	2,66	2,51	2,41
19	4,38	3,52	3,13	2,90	2,74	2,63	2,48	2,38
20	4,35	3,49	3,10	2,87	2,71	2,60	2,45	2,35
21	4,32	3,47	3,07	2,84	2,68	2,57	2,42	2,32
22	4,30	3,44	3,05	2,82	2,66	2,55	2,40	2,30
23	4,28	3,42	3,03	2,80	2,64	2,53	2,37	2,27
24	4,26	3,40	3,01	2,78	2,62	2,51	2,36	2,25
25	4,24	3,39	2,99	2,76	2,60	2,49	2,34	2,24
30	4,17	3,32	2,92	2,69	2,53	2,42	2,27	2,16
35	4,12	3,27	2,87	2,64	2,49	2,37	2,22	2,11
40	4,08	3,23	2,84	2,61	2,45	2,34	2,18	2,08
45	4,06	3,20	2,81	2,58	2,42	2,31	2,15	2,05
50	4,03	3,18	2,79	2,56	2,40	2,29	2,13	2,03
60	4,00	3,15	2,76	2,53	2,37	2,25	2,10	1,99
70	3,98	3,13	2,74	2,50	2,35	2,23	2,07	1,97
80	3,96	3,11	2,72	2,49	2,33	2,21	2,06	1,95
90	3,95	3,10	2,71	2,47	2,32	2,20	2,04	1,94
100	3,94	3,09	2,70	2,46	2,31	2,19	2,03	1,93

Kvantily $\chi^2_{1-\alpha}$ rozdělení χ^2 o df stupních volnosti

$\chi^2_{1-\alpha}(df)$	α		
df	0,05	0,01	0,001
1	3,84	6,63	10,83
2	5,99	9,21	13,82
3	7,81	11,34	16,27
4	9,49	13,28	18,47
5	11,07	15,09	20,51
6	12,59	16,81	22,46
7	14,07	18,48	24,32
8	15,51	20,09	26,12
9	16,92	21,67	27,88
10	18,31	23,21	29,59
11	19,68	24,73	31,26
12	21,03	26,22	32,91
13	22,36	27,69	34,53
14	23,68	29,14	36,12
15	25,00	30,58	37,70
16	26,30	32,00	39,25
17	27,59	33,41	40,79
18	28,87	34,81	42,31
19	30,14	36,19	43,82
20	31,41	37,57	45,31
21	32,67	38,93	46,80
22	33,92	40,29	48,27
23	35,17	41,64	49,73
24	36,42	42,98	51,18
25	37,65	44,31	52,62
30	43,77	50,89	59,70
35	49,80	57,34	66,62
40	55,76	63,69	73,40
45	61,66	69,96	80,08
50	67,50	76,15	86,66
60	79,08	88,38	99,61
70	90,53	100,43	112,32
80	101,88	112,33	124,84
90	113,15	124,12	137,21
100	124,34	135,81	149,45

Kvantily $t_{1-\frac{\alpha}{2}}(df)$ Studentova *t* rozdělení o df stupních volnosti (pro oboustranný test !)

$t_{1-\frac{\alpha}{2}}(df)$	α		
df	0,05	0,01	0,001
1	12,706	63,656	636,578
2	4,303	9,925	31,600
3	3,182	5,841	12,924
4	2,776	4,604	8,610
5	2,571	4,032	6,869
6	2,447	3,707	5,959
7	2,365	3,499	5,408
8	2,306	3,355	5,041
9	2,262	3,250	4,781
10	2,228	3,169	4,587
11	2,201	3,106	4,437
12	2,179	3,055	4,318
13	2,160	3,012	4,221
14	2,145	2,977	4,140
15	2,131	2,947	4,073
16	2,120	2,921	4,015
17	2,110	2,898	3,965
18	2,101	2,878	3,922
19	2,093	2,861	3,883
20	2,086	2,845	3,850
21	2,080	2,831	3,819
22	2,074	2,819	3,792
23	2,069	2,807	3,768
24	2,064	2,797	3,745
25	2,060	2,787	3,725
30	2,042	2,750	3,646
35	2,030	2,724	3,591
40	2,021	2,704	3,551
45	2,014	2,690	3,520
50	2,009	2,678	3,496
60	2,000	2,660	3,460
70	1,994	2,648	3,435
80	1,990	2,639	3,416
90	1,987	2,632	3,402
100	1,984	2,626	3,390
∞	1,960	2,576	3,290

Kvantily $t_{1-\alpha}(df)$ Studentova *t* rozdělení o df stupních volnosti (pro jednostranný test)

$t_{1-\alpha}(df)$	α		
df	0,05	0,01	0,001
1	6,314	31,821	318,289
2	2,920	6,965	22,328
3	2,353	4,541	10,214
4	2,132	3,747	7,173
5	2,015	3,365	5,894
6	1,943	3,143	5,208
7	1,895	2,998	4,785
8	1,860	2,896	4,501
9	1,833	2,821	4,297
10	1,812	2,764	4,144
11	1,796	2,718	4,025
12	1,782	2,681	3,930
13	1,771	2,650	3,852
14	1,761	2,624	3,787
15	1,753	2,602	3,733
16	1,746	2,583	3,686
17	1,740	2,567	3,646
18	1,734	2,552	3,610
19	1,729	2,539	3,579
20	1,725	2,528	3,552
21	1,721	2,518	3,527
22	1,717	2,508	3,505
23	1,714	2,500	3,485
24	1,711	2,492	3,467
25	1,708	2,485	3,450
30	1,697	2,457	3,385
35	1,690	2,438	3,340
40	1,684	2,423	3,307
45	1,679	2,412	3,281
50	1,676	2,403	3,261
60	1,671	2,390	3,232
70	1,667	2,381	3,211
80	1,664	2,374	3,195
90	1,662	2,368	3,183
100	1,660	2,364	3,174
∞	1,645	2,326	3,090

Kritické hodnoty párového Wilcoxonova testu

n	α		*n*	α		*n*	α	
	0,05	0,01		0,05	0,01		0,05	0,01
6	0	-	26	98	75	46	361	307
7	2	-	27	107	83	47	378	322
8	3	0	28	116	91	48	396	339
9	5	1	29	126	100	49	415	355
10	8	3	30	137	109	50	434	373
11	10	5	31	147	118	51	453	390
12	13	7	32	159	128	52	473	408
13	17	9	33	170	138	53	494	427
14	21	12	34	182	148	54	514	445
15	25	15	35	195	159	55	536	465
16	29	19	36	208	171	56	557	484
17	34	23	37	221	182	57	579	504
18	40	27	38	235	194	58	602	525
19	46	32	39	249	207	59	625	546
20	52	37	40	264	220	60	648	567
21	58	42	41	279	233	61	672	589
22	65	48	42	294	247	62	697	611
23	73	54	43	310	261	63	721	634
24	81	61	44	327	276	64	747	657
25	89	68	45	343	291	65	772	681

5% kritické hodnoty Mannova-Whitneyova testu

	n_2																		
n_1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
4	-	-	0																
5	-	0	1	2															
6	-	1	2	3	5														
7	-	1	3	5	6	8													
8	0	2	4	6	8	10	13												
9	0	2	4	7	10	12	15	17											
10	0	3	5	8	11	14	17	20	23										
11	0	3	6	9	13	16	19	23	26	30									
12	1	4	7	11	14	18	22	26	29	33	37								
13	1	4	8	12	16	20	24	28	33	37	41	45							
14	1	5	9	13	17	22	26	31	36	40	45	50	55						
15	1	5	10	14	19	24	29	34	39	44	49	54	59	64					
16	1	6	11	15	21	26	31	37	42	47	53	59	64	70	75				
17	2	6	11	17	22	28	34	39	45	51	57	63	69	75	81	87			
18	2	7	12	18	24	30	36	42	48	55	61	67	74	80	86	93	99		
19	2	7	13	19	25	32	38	45	52	58	65	72	78	85	92	99	106	113	
20	2	8	14	20	27	34	41	48	55	62	69	76	83	90	98	105	112	119	127
21	3	8	15	22	29	36	43	50	58	65	73	80	88	96	103	111	119	126	134
22	3	9	16	23	30	38	45	53	61	69	77	85	93	101	109	117	125	133	141
23	3	9	17	24	32	40	48	56	64	73	81	89	98	106	115	123	132	140	149
24	3	10	17	25	33	42	50	59	67	76	85	94	102	111	120	129	138	147	156
25	3	10	18	27	35	44	53	62	71	80	89	98	107	117	126	135	145	154	163
26	4	11	19	28	37	46	55	64	74	83	93	102	112	122	132	141	151	161	171
27	4	11	20	29	38	48	57	67	77	87	97	107	117	127	137	147	158	168	178
28	4	12	21	30	40	50	60	70	80	90	101	111	122	132	143	154	164	175	186
29	4	13	22	32	42	52	62	73	83	94	105	116	127	138	149	160	171	182	193
30	5	13	23	33	43	54	65	76	87	98	109	120	131	143	154	166	177	189	200

Tabulka proporcí hustoty standardizovaného normálního rozdělení. Hodnoty v tabulce udávají proporci hustoty normálního rozdělení ležící za daným bodem Z (tj. za tzv. normal deviate).

TABLE B.2 Proportions of the Normal Curve (One-Tailed)

This table gives the proportion of the normal curve that lies beyond (i.e., is more extreme than) a given normal deviate; e.g., $Z = (X_i - \mu)/\sigma$ or $Z = (\bar{X} - \mu)/\sigma_{\bar{X}}$. For example, the proportion of a normal distribution for which $Z \geq 1.51$ is 0.0655.

Z	0	1	2	3	4	5	6	7	8	9	Z
0.0	0.5000	0.4960	0.4920	0.4880	0.4840	0.4801	0.4761	0.4721	0.4681	0.4641	0.0
0.1	0.4602	0.4562	0.4522	0.4483	0.4443	0.4404	0.4364	0.4325	0.4286	0.4247	0.1
0.2	0.4207	0.4168	0.4129	0.4090	0.4052	0.4013	0.3974	0.3936	0.3897	0.3859	0.2
0.3	0.3821	0.3783	0.3745	0.3707	0.3669	0.3632	0.3594	0.3557	0.3520	0.3483	0.3
0.4	0.3446	0.3409	0.3372	0.3336	0.3300	0.3264	0.3228	0.3192	0.3156	0.3121	0.4
0.5	0.3085	0.3050	0.3015	0.2981	0.2946	0.2912	0.2877	0.2843	0.2810	0.2776	0.5
0.6	0.2743	0.2709	0.2676	0.2643	0.2611	0.2578	0.2546	0.2514	0.2483	0.2451	0.6
0.7	0.2420	0.2389	0.2358	0.2327	0.2297	0.2266	0.2236	0.2207	0.2177	0.2148	0.7
0.8	0.2119	0.2090	0.2061	0.2033	0.2005	0.1977	0.1949	0.1922	0.1894	0.1867	0.8
0.9	0.1841	0.1814	0.1788	0.1762	0.1736	0.1711	0.1685	0.1660	0.1635	0.1611	0.9
1.0	0.1587	0.1562	0.1539	0.1515	0.1492	0.1469	0.1446	0.1423	0.1401	0.1379	1.0
1.1	0.1357	0.1335	0.1314	0.1292	0.1271	0.1251	0.1230	0.1210	0.1190	0.1170	1.1
1.2	0.1151	0.1131	0.1112	0.1093	0.1075	0.1056	0.1038	0.1020	0.1003	0.0985	1.2
1.3	0.0968	0.0951	0.0934	0.0918	0.0901	0.0885	0.0869	0.0853	0.0838	0.0823	1.3
1.4	0.0808	0.0793	0.0778	0.0764	0.0749	0.0735	0.0721	0.0708	0.0694	0.0681	1.4
1.5	0.0668	0.0655	0.0643	0.0630	0.0618	0.0606	0.0594	0.0582	0.0571	0.0559	1.5
1.6	0.0548	0.0537	0.0526	0.0516	0.0505	0.0495	0.0485	0.0475	0.0465	0.0455	1.6
1.7	0.0446	0.0436	0.0427	0.0418	0.0409	0.0401	0.0392	0.0384	0.0375	0.0367	1.7
1.8	0.0359	0.0351	0.0344	0.0336	0.0329	0.0322	0.0314	0.0307	0.0301	0.0294	1.8
1.9	0.0287	0.0281	0.0274	0.0268	0.0262	0.0256	0.0250	0.0244	0.0239	0.0233	1.9
2.0	0.0228	0.0222	0.0217	0.0212	0.0207	0.0202	0.0197	0.0192	0.0188	0.0183	2.0
2.1	0.0179	0.0174	0.0170	0.0166	0.0162	0.0158	0.0154	0.0150	0.0146	0.0143	2.1
2.2	0.0139	0.0136	0.0132	0.0129	0.0125	0.0122	0.0119	0.0116	0.0113	0.0110	2.2
2.3	0.0107	0.0104	0.0102	0.0099	0.0096	0.0094	0.0091	0.0089	0.0087	0.0084	2.3
2.4	0.0082	0.0080	0.0078	0.0075	0.0073	0.0071	0.0069	0.0068	0.0066	0.0064	2.4
2.5	0.0062	0.0060	0.0059	0.0057	0.0055	0.0054	0.0052	0.0051	0.0049	0.0048	2.5
2.6	0.0047	0.0045	0.0044	0.0043	0.0041	0.0040	0.0039	0.0038	0.0037	0.0036	2.6
2.7	0.0035	0.0034	0.0033	0.0032	0.0031	0.0030	0.0029	0.0028	0.0027	0.0026	2.7
2.8	0.0026	0.0025	0.0024	0.0023	0.0023	0.0022	0.0021	0.0021	0.0020	0.0019	2.8
2.9	0.0019	0.0018	0.0018	0.0017	0.0016	0.0016	0.0015	0.0015	0.0014	0.0014	2.9
3.0	0.0013	0.0013	0.0013	0.0012	0.0012	0.0011	0.0011	0.0011	0.0010	0.0010	3.0
3.1	0.0010	0.0009	0.0009	0.0009	0.0008	0.0008	0.0008	0.0008	0.0007	0.0007	3.1
3.2	0.0007	0.0007	0.0006	0.0006	0.0006	0.0006	0.0006	0.0005	0.0005	0.0005	3.2
3.3	0.0005	0.0005	0.0005	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0003	3.3
3.4	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0002	3.4
3.5	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	3.5
3.6	0.0002	0.0002	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	3.6
3.7	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	3.7
3.8	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	3.8

Table B.2 was prepared using an algorithm of Hastings (1955: 187).
Probabilities for values of Z in between those shown in this table may be obtained by either linear or harmonic interpolation.

Critical values of Z may be found in Appendix Table B.3 as $Z_\alpha = t_{\alpha,\infty}$. For example, $Z_{0.05(2)} = t_{0.05(2),\infty} = 1.9600$. These critical values are related to those of χ^2 and F as

$$Z_{\alpha(2)} = t_{\alpha(2),\infty} = \sqrt{F_{\alpha(1),1,\infty}} = \sqrt{\chi^2_{\alpha,1}}.$$

Tabulka Studentova t-rozdělení

Pravděpodobnosti hodnot >=
než hodnota *t* (vypočtená z *t*-transformace)
v tabulce

1. ř. - pro oboustranný test, 2. pro jednostranný test

Hodnoty *t*

Stupně volnosti (n-1)

Critical Values of the *t* Distribution

ν	α(2): 0.50	0.20	0.10	0.05	0.02	0.01	0.005	0.002	0.001
	α(1): 0.25	0.10	0.05	0.025	0.01	0.005	0.0025	0.001	0.0005
1	1.000	3.078	6.314	12.706	31.821	63.657	127.321	318.309	636.619
2	0.816	1.886	2.920	4.303	6.965	9.925	14.089	22.327	31.599
3	0.765	1.638	2.353	3.182	4.541	5.841	7.453	10.215	12.924
4	0.741	1.533	2.132	2.776	3.747	4.604	5.598	7.173	8.610
5	0.727	1.476	2.015	2.571	3.365	4.032	4.773	5.893	6.869
6	0.718	1.440	1.943	2.447	3.143	3.707	4.317	5.208	5.959
7	0.711	1.415	1.895	2.365	2.998	3.499	4.029	4.785	5.408
8	0.706	1.397	1.860	2.306	2.896	3.355	3.833	4.501	5.041
9	0.703	1.383	1.833	2.262	2.821	3.250	3.690	4.297	4.781
10	0.700	1.372	1.812	2.228	2.764	3.169	3.581	4.144	4.587
11	0.697	1.363	1.796	2.201	2.718	3.106	3.497	4.025	4.437
12	0.695	1.356	1.782	2.179	2.681	3.055	3.428	3.930	4.318
13	0.694	1.350	1.771	2.160	2.650	3.012	3.372	3.852	4.221
14	0.692	1.345	1.761	2.145	2.624	2.977	3.326	3.787	4.140
15	0.691	1.341	1.753	2.131	2.602	2.947	3.286	3.733	4.073
16	0.690	1.337	1.746	2.120	2.583	2.921	3.252	3.686	4.015
17	0.689	1.333	1.740	2.110	2.567	2.898	3.222	3.646	3.965
18	0.688	1.330	1.734	2.101	2.552	2.878	3.197	3.610	3.922
19	0.688	1.328	1.729	2.093	2.539	2.861	3.174	3.579	3.883
20	0.687	1.325	1.725	2.086	2.528	2.845	3.153	3.552	3.850
21	0.686	1.323	1.721	2.080	2.518	2.831	3.135	3.527	3.819
22	0.686	1.321	1.717	2.074	2.508	2.819	3.119	3.505	3.792
23	0.685	1.319	1.714	2.069	2.500	2.807	3.104	3.485	3.768
24	0.685	1.318	1.711	2.064	2.492	2.797	3.091	3.467	3.745
25	0.684	1.316	1.708	2.060	2.485	2.787	3.078	3.450	3.725
26	0.684	1.315	1.706	2.056	2.479	2.779	3.067	3.435	3.707
27	0.684	1.314	1.703	2.052	2.473	2.771	3.057	3.421	3.690
28	0.683	1.313	1.701	2.048	2.467	2.763	3.047	3.408	3.674
29	0.683	1.311	1.699	2.045	2.462	2.756	3.038	3.396	3.659
30	0.683	1.310	1.697	2.042	2.457	2.750	3.030	3.385	3.646
31	0.682	1.309	1.696	2.040	2.453	2.744	3.022	3.375	3.633
32	0.682	1.309	1.694	2.037	2.449	2.738	3.015	3.365	3.622
33	0.682	1.308	1.692	2.035	2.445	2.733	3.008	3.356	3.611
34	0.682	1.307	1.691	2.032	2.441	2.728	3.002	3.348	3.601
35	0.682	1.306	1.690	2.030	2.438	2.724	2.996	3.340	3.591
36	0.681	1.306	1.688	2.028	2.434	2.719	2.990	3.333	3.582
37	0.681	1.305	1.687	2.026	2.431	2.715	2.985	3.326	3.574
38	0.681	1.304	1.686	2.024	2.429	2.712	2.980	3.319	3.566
39	0.681	1.304	1.685	2.023	2.426	2.708	2.976	3.313	3.558
40	0.681	1.303	1.684	2.021	2.423	2.704	2.971	3.307	3.551
41	0.681	1.303	1.683	2.020	2.421	2.701	2.967	3.301	3.544
42	0.680	1.302	1.682	2.018	2.418	2.698	2.963	3.296	3.538
43	0.680	1.302	1.681	2.017	2.416	2.695	2.959	3.291	3.532
44	0.680	1.301	1.680	2.015	2.414	2.692	2.956	3.286	3.526
45	0.680	1.301	1.679	2.014	2.412	2.690	2.952	3.281	3.520
46	0.680	1.300	1.679	2.013	2.410	2.687	2.949	3.277	3.515
47	0.680	1.300	1.678	2.012	2.408	2.685	2.946	3.273	3.510
48	0.680	1.299	1.677	2.011	2.407	2.682	2.943	3.269	3.505
49	0.680	1.299	1.677	2.010	2.405	2.680	2.940	3.265	3.500
50	0.679	1.299	1.676	2.009	2.403	2.678	2.937	3.261	3.496

This table was prepared using Equations 26.7.3 and 26.7.4 of Zelen and Severo (1964), except for the values at infinity degrees of freedom, which are adapted from White (1970). Except for the values at infinity degrees of freedom, *t* was calculated to eight decimal places and then rounded to three decimal places.

Examples:

$$t_{0.05(2),13} = 2.160 \quad \text{and} \quad t_{0.01(1),19} = 2.539$$