UNIVERSITÉ LUMIERE LYON 2

Tables statistiques

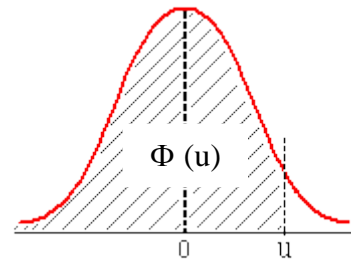*R. Abdesselam*
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Table de Loi Normale

Fonction de répartition Φ de la loi normale
centrée réduite : $U \to N(0.1)$.
Probabilité de trouver une valeur inférieure à u.
$\Phi(u) = P(U \le u)$; $\Phi(-u) = P(U \le -u) = 1 - \Phi(u)$

$\Phi(u)$

u	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.0	0.50000	0.50399	0.50798	0.51197	0.51595	0.51994	0.52392	0.52790	0.53188	0.53586
0.1	0.53983	0.54380	0.54776	0.55172	0.55567	0.55962	0.56356	0.56749	0.57142	0.57535
0.2	0.57926	0.58317	0.58706	0.59095	0.59483	0.59871	0.60257	0.60642	0.61026	0.61409
0.3	0.61791	0.62172	0.62552	0.62930	0.63307	0.63683	0.64058	0.64431	0.64803	0.65173
0.4	0.65542	0.65910	0.66276	0.66640	0.67003	0.67364	0.67724	0.68082	0.68439	0.68793
0.5	0.69146	0.69497	0.69847	0.70194	0.70540	0.70884	0.71226	0.71566	0.71904	0.72240
0.6	0.72575	0.72907	0.73237	0.73565	0.73891	0.74215	0.74537	0.74857	0.75175	0.75490
0.7	0.75804	0.76115	0.76424	0.76730	0.77035	0.77337	0.77637	0.77935	0.78230	0.78524
0.8	0.78814	0.79103	0.79389	0.79673	0.79955	0.80234	0.80511	0.80785	0.81057	0.81327
0.9	0.81594	0.81859	0.82121	0.82381	0.82639	0.82894	0.83147	0.83398	0.83646	0.83891
1.0	0.84134	0.84375	0.84614	0.84849	0.85083	0.85314	0.85543	0.85769	0.85993	0.86214
1.1	0.86433	0.86650	0.86864	0.87076	0.87286	0.87493	0.87698	0.87900	0.88100	0.88298
1.2	0.88493	0.88686	0.88877	0.89065	0.89251	0.89435	**0.89617**	0.89796	0.89973	0.90147
1.3	0.90320	0.90490	0.90658	0.90824	0.90988	0.91149	0.91309	0.91466	0.91621	0.91774
1.4	0.91924	0.92073	0.92220	0.92364	0.92507	0.92647	0.92785	0.92922	0.93056	0.93189
1.5	0.93319	0.93448	0.93574	0.93699	0.93822	0.93943	0.94062	0.94179	0.94295	0.94408
1.6	0.94520	0.94630	0.94738	0.94845	0.94950	0.95053	0.95154	0.95254	0.95352	0.95449
1.7	0.95543	0.95637	0.95728	0.95818	0.95907	0.95994	0.96080	0.96164	0.96246	0.96327
1.8	0.96407	0.96485	0.96562	0.96638	0.96712	0.96784	0.96856	0.96926	0.96995	0.97062
1.9	0.97128	0.97193	0.97257	0.97320	0.97381	0.97441	0.97500	0.97558	0.97615	0.97670
2.0	0.97725	0.97778	0.97831	0.97882	0.97932	0.97982	0.98030	0.98077	0.98124	0.98169
2.1	0.98214	0.98257	0.98300	0.98341	0.98382	0.98422	0.98461	0.98500	0.98537	0.98574
2.2	0.98610	0.98645	0.98679	0.98713	0.98745	0.98778	0.98809	0.98840	0.98870	0.98899
2.3	0.98928	0.98956	0.98983	0.99010	0.99036	0.99061	0.99086	0.99111	0.99134	0.99158
2.4	0.99180	0.99202	0.99224	0.99245	0.99266	0.99286	0.99305	0.99324	0.99343	0.99361
2.5	0.99379	0.99396	0.99413	0.99430	0.99446	0.99461	0.99477	0.99492	0.99506	0.99520
2.6	0.99534	0.99547	0.99560	0.99573	0.99585	0.99598	0.99609	0.99621	0.99632	0.99643
2.7	0.99653	0.99664	0.99674	0.99683	0.99693	0.99702	0.99711	0.99720	0.99728	0.99736
2.8	0.99744	0.99752	0.99760	0.99767	0.99774	0.99781	0.99788	0.99795	0.99801	0.99807
2.9	0.99813	0.99819	0.99825	0.99831	0.99836	0.99841	0.99846	0.99851	0.99856	0.99861
3.0	0.99865	0.99869	0.99874	0.99878	0.99882	0.99886	0.99889	0.99893	0.99896	0.99900

Exemple : $\Phi(1.26) = P(U \le 1.26) = 0.89617 = 89.62\%$

Pour P < 0.5 (colonne de gauche et ligne supérieure). les fractiles sont négatifs.
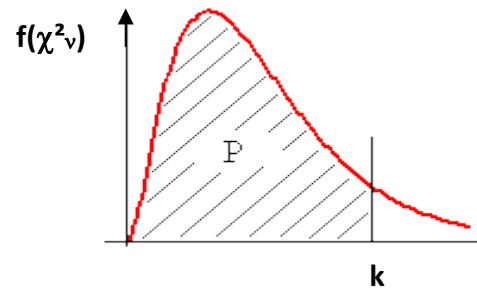*Pour P > 0.5 (colonne de droite et ligne inférieure). les fractiles sont positifs.*

P	0	0.001	0.002	0.003	0.004	0.005	0.006	0.007	0.008	0.009	0.01	
0	infini	3.0902	2.8782	2.7478	2.6521	2.5758	2.5121	2.4573	2.4089	2.3656	2.3263	0.99
0.01	2.3263	2.2904	2.2571	2.2262	2.1973	2.1701	2.1444	2.1201	2.0969	2.0748	2.0537	0.98
0.02	2.0537	2.0335	2.0141	1.9954	1.9774	1.9600	1.9431	1.9268	1.9110	1.8957	1.8808	0.97
0.03	1.8808	1.8663	1.8522	1.8384	1.8250	1.8119	1.7991	1.7866	1.7744	1.7624	1.7507	0.96
0.04	1.7507	1.7392	1.7279	1.7169	1.7060	1.6954	1.6849	1.6747	1.6646	1.6546	1.6449	0.95
0.05	1.6449	1.6352	1.6258	1.6164	1.6072	1.5982	1.5893	1.5805	1.5718	1.5632	1.5548	0.94
0.06	1.5548	1.5464	1.5382	1.5301	1.5220	1.5141	1.5063	1.4985	1.4909	1.4833	1.4758	0.93
0.07	1.4758	1.4684	1.4611	1.4538	1.4466	1.4395	1.4325	1.4255	1.4187	1.4118	1.4051	0.92
0.08	1.4051	1.3984	1.3917	1.3852	1.3787	1.3722	1.3658	1.3595	1.3532	1.3469	1.3408	0.91
0.09	1.3408	1.3346	1.3285	1.3225	1.3165	1.3106	1.3047	1.2988	1.2930	1.2873	1.2816	0.90
0.10	1.2816	1.2759	1.2702	1.2646	1.2591	1.2536	1.2481	1.2426	1.2372	1.2319	1.2265	0.89
0.11	1.2265	1.2212	1.2160	1.2107	1.2055	1.2004	1.1952	1.1901	1.1850	1.1800	1.1750	0.88
0.12	1.1750	1.1700	1.1650	1.1601	1.1552	1.1503	1.1455	1.1407	1.1359	1.1311	1.1264	0.87
0.13	1.1264	1.1217	1.1170	1.1123	1.1077	1.1031	1.0985	1.0939	1.0893	1.0848	1.0803	0.86
0.14	1.0803	1.0758	1.0714	1.0669	1.0625	1.0581	1.0537	1.0494	1.0451	1.0407	1.0364	0.85
0.15	1.0364	1.0322	1.0279	1.0237	1.0194	1.0152	1.0110	1.0069	1.0027	0.9986	0.9945	0.84
0.16	0.9945	0.9904	0.9863	0.9822	0.9782	0.9741	0.9701	0.9661	0.9621	0.9581	0.9542	0.83
0.17	0.9542	0.9502	0.9463	0.9424	0.9385	0.9346	0.9307	0.9269	0.9230	0.9192	0.9154	0.82
0.18	0.9154	0.9116	0.9078	0.9040	0.9002	0.8965	0.8927	0.8890	0.8853	0.8816	0.8779	0.81
0.19	0.8779	0.8742	0.8706	0.8669	0.8632	0.8596	0.8560	0.8524	0.8488	0.8452	0.8416	0.80
0.20	0.8416	0.8381	0.8345	0.8310	0.8274	0.8239	0.8204	0.8169	0.8134	0.8099	0.8064	0.79
0.21	0.8064	0.8030	0.7995	0.7961	0.7926	0.7892	0.7858	0.7824	0.7790	0.7756	0.7722	0.78
0.22	0.7722	0.7688	0.7655	0.7621	0.7588	0.7554	0.7521	0.7488	0.7454	0.7421	0.7388	0.77
0.23	0.7388	0.7356	0.7323	0.7290	0.7257	0.7225	0.7192	0.7160	0.7128	0.7095	0.7063	0.76
0.24	0.7063	0.7031	0.6999	0.6967	0.6935	0.6903	0.6871	0.6840	0.6808	0.6776	0.6745	0.75
0.25	0.6745	0.6713	0.6682	0.6651	0.6620	0.6588	0.6557	0.6526	0.6495	0.6464	0.6433	0.74
0.26	0.6433	0.6403	0.6372	0.6341	0.6311	0.6280	0.6250	0.6219	0.6189	0.6158	0.6128	0.73
0.27	0.6128	0.6098	0.6068	0.6038	0.6008	0.5978	0.5948	0.5918	0.5888	0.5858	0.5828	0.72
0.28	0.5828	0.5799	0.5769	0.5740	0.5710	0.5681	0.5651	0.5622	0.5592	0.5563	0.5534	0.71
0.29	0.5534	0.5505	0.5476	0.5446	0.5417	0.5388	0.5359	0.5330	0.5302	0.5273	0.5244	0.70
0.30	0.5244	0.5215	0.5187	0.5158	0.5129	0.5101	0.5072	0.5044	0.5015	0.4987	0.4958	0.69
0.31	0.4958	0.4930	0.4902	0.4874	0.4845	0.4817	0.4789	0.4761	0.4733	0.4705	0.4677	0.68
0.32	0.4677	0.4649	0.4621	0.4593	0.4565	0.4538	0.4510	0.4482	0.4454	0.4427	0.4399	0.67
0.33	0.4399	0.4372	0.4344	0.4316	0.4289	0.4261	0.4234	0.4207	0.4179	0.4152	0.4125	0.66
0.34	0.4125	0.4097	0.4070	0.4043	0.4016	0.3989	0.3961	0.3934	0.3907	0.3880	0.3853	0.65
0.35	0.3853	0.3826	0.3799	0.3772	0.3745	0.3719	0.3692	0.3665	0.3638	0.3611	0.3585	0.64
0.36	0.3585	0.3558	0.3531	0.3505	0.3478	0.3451	**0.3425**	0.3398	0.3372	0.3345	0.3319	0.63
0.37	0.3319	0.3292	0.3266	0.3239	0.3213	0.3186	0.3160	0.3134	0.3107	0.3081	0.3055	0.62
0.38	0.3055	0.3029	0.3002	0.2976	0.2950	0.2924	0.2898	0.2871	0.2845	0.2819	0.2793	0.61
0.39	0.2793	0.2767	0.2741	0.2715	0.2689	0.2663	0.2637	0.2611	0.2585	0.2559	0.2533	0.60
0.40	0.2533	0.2508	**0.2482**	0.2456	0.2430	0.2404	0.2378	0.2353	0.2327	0.2301	0.2275	0.59
0.41	0.2275	0.2250	0.2224	0.2198	0.2173	0.2147	0.2121	0.2096	0.2070	0.2045	0.2019	0.58
0.42	0.2019	0.1993	0.1968	0.1942	0.1917	0.1891	0.1866	0.1840	0.1815	0.1789	0.1764	0.57
0.43	0.1764	0.1738	0.1713	0.1687	0.1662	0.1637	0.1611	0.1586	0.1560	0.1535	0.1510	0.56
0.44	0.1510	0.1484	0.1459	0.1434	0.1408	0.1383	0.1358	0.1332	0.1307	0.1282	0.1257	0.55
0.45	0.1257	0.1231	0.1206	0.1181	0.1156	0.1130	0.1105	0.1080	0.1055	0.1030	0.1004	0.54
0.46	0.1004	0.0979	0.0954	0.0929	0.0904	0.0878	0.0853	0.0828	0.0803	0.0778	0.0753	0.53
0.47	0.0753	0.0728	0.0702	0.0677	0.0652	0.0627	0.0602	0.0577	0.0552	0.0527	0.0502	0.52
0.48	0.0502	0.0476	0.0451	0.0426	0.0401	0.0376	0.0351	0.0326	0.0301	0.0276	0.0251	0.51
0.49	0.0251	0.0226	0.0201	0.0175	0.0150	0.0125	0.0100	0.0075	0.0050	0.0025	0.0000	0.50
	0.01	0.009	0.008	0.007	0.006	0.005	0.004	0.003	0.002	0.001	0	P

Exemples : Φ (u) = P(U ≤ u) = P = 0.6340 ⇒ u = 0.3425 ; Φ (u) = P(U ≤ u) = P = 0.4020 ⇒ u = - 0.2482

Table de la loi du χ^2_ν

Fractiles F_P de la loi de khi-deux à ν degrés de liberté

$$P = F(k) = P(\chi^2_\nu \le k)$$

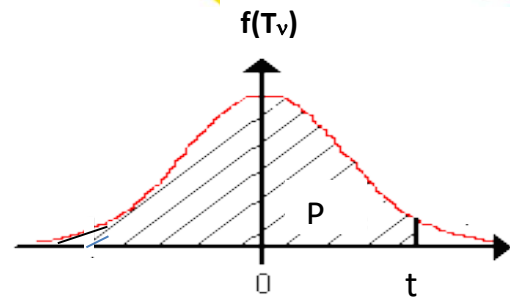| ν \ P	0.010	0.020	0.025	0.050	0.100	0.150	0.200	0.800	0.900	0.950	0.975	0.980	0.990
1	0.000	0.001	0.001	0.004	0.016	0.036	0.064	1.642	2.706	3.841	5.024	5.412	6.64
2	0.020	0.040	0.051	0.103	0.211	0.325	0.446	3.219	4.605	5.991	7.378	7.824	9.21
3	0.115	0.185	0.216	0.352	0.584	0.798	1.005	4.642	6.251	7.815	9.348	9.837	11.35
4	0.297	0.429	0.484	0.711	1.064	1.366	1.649	5.989	7.779	9.488	11.143	11.668	13.28
5	0.554	0.752	0.831	1.145	1.610	1.994	2.343	7.289	9.236	11.070	12.833	13.388	15.09
6	0.872	1.134	1.237	1.635	2.204	2.661	3.070	8.558	10.645	12.592	14.449	15.033	16.81
7	1.239	1.564	1.690	2.167	2.833	3.358	3.822	9.803	12.017	14.067	16.013	16.622	18.48
8	1.646	2.032	2.180	2.733	3.490	4.078	4.594	11.030	13.362	15.507	17.535	18.168	20.09
9	2.088	2.532	2.700	3.325	4.168	4.817	5.380	12.242	14.684	16.919	19.023	19.679	21.67
10	2.558	3.059	3.247	3.940	4.865	5.570	6.179	13.442	15.987	**18.307**	20.483	21.161	23.21
11	3.053	3.609	3.816	4.575	5.578	6.336	6.989	14.631	17.275	19.675	21.920	22.618	24.73
12	3.571	4.178	4.404	5.226	6.304	7.114	7.807	15.812	18.549	21.026	23.337	24.054	26.22
13	4.107	4.765	5.009	5.892	7.042	7.901	8.634	16.985	19.812	22.362	24.736	25.472	27.69
14	4.660	5.368	5.629	6.571	7.790	8.696	9.467	18.151	21.064	23.685	26.119	26.873	29.14
15	5.229	5.985	6.262	7.261	8.547	9.499	10.307	19.311	22.307	24.996	27.488	28.259	30.58
16	5.812	6.614	6.908	7.962	9.312	10.309	11.152	20.465	23.542	26.296	28.845	29.633	32.00
17	6.408	7.255	7.564	8.672	10.085	11.125	12.002	21.615	24.769	27.587	30.191	30.995	33.41
18	7.015	7.906	8.231	9.390	10.865	11.946	12.857	22.760	25.989	28.869	31.526	32.346	34.81
19	7.633	8.567	8.907	10.117	11.651	12.773	13.716	23.900	27.204	30.144	32.852	33.687	36.19
20	8.260	9.237	9.591	10.851	12.443	13.604	14.578	25.038	28.412	31.410	34.170	35.020	37.57
21	8.897	9.915	10.283	11.591	13.240	14.439	15.445	26.171	29.615	32.671	35.479	36.343	38.93
22	9.542	10.600	10.982	12.338	14.041	15.279	16.314	27.301	30.813	33.924	36.781	37.659	40.29
23	10.196	11.293	11.689	13.091	14.848	16.122	17.187	28.429	32.007	35.172	38.076	38.968	41.64
24	10.856	11.992	12.401	13.848	15.659	16.969	18.062	29.553	33.196	36.415	39.364	40.270	42.98
25	11.524	12.697	13.120	14.611	16.473	17.818	18.940	30.675	34.382	37.652	40.646	41.566	44.31
26	12.198	13.409	13.844	15.379	17.292	18.671	19.820	31.795	35.563	38.885	41.923	42.856	45.64
27	12.879	14.125	14.573	16.151	18.114	19.527	20.703	32.912	36.741	40.113	43.195	44.140	46.96
28	13.565	14.847	15.308	16.928	18.939	20.386	21.588	34.027	37.916	41.337	44.461	45.419	48.28
29	14.256	15.574	16.047	17.708	19.768	21.247	22.475	35.139	39.087	42.557	45.722	46.693	49.59
30	14.953	16.306	16.791	18.493	20.599	22.110	23.364	36.250	40.256	43.773	46.979	47.962	50.89
40	22.164	23.838	24.433	26.509	29.051	30.856	32.345	47.269	51.805	55.758	59.342	60.436	63.69
50	29.707	31.664	32.357	34.764	37.689	39.754	41.449	58.164	63.167	67.505	71.420	72.613	76.15
60	37.485	39.699	40.482	43.188	46.459	48.759	50.641	68.972	74.397	79.082	83.298	84.580	88.38
80	53.540	56.213	57.153	60.391	64.278	66.994	69.207	90.405	96.578	101.88	106.63	108.07	112.33

Exemple : $\nu = 10$ d.d.l. $P = P(\chi^2_{10} \le F_P) = 0.95 \Rightarrow F_P = 18.307$

Approximation : Pour $\nu > 100$ d.l.l. $\chi^2(\nu) \cong N(\nu ; \sqrt{2\nu})$ ou $\sqrt{2\chi^2} - \sqrt{2\nu - 1} \cong N(0,1)$

Table de la Loi de Student

Fractiles de la loi de Student à ν degrés de liberté. Probabilité P de trouver une valeur inférieure ou égale à t

$$P = F(t) = P(T_\nu \le t)$$

f(T$_\nu$)

P

0   t

ν \ P	0,9250	0,9300	0,9350	0,9400	0,9450	0,9500	0,9550	0,9600	0,9650	0,9700	0,9750	0,9900	0,9950
1	4,1653	4,4737	4,8288	5,2422	5,7297	6,3138	7,0264	7,9158	9,0579	10,5789	12,7062	31,8205	63,6567
2	2,2819	2,3834	2,4954	2,6202	2,7604	2,9200	3,1040	3,3198	3,5782	3,8964	4,3027	6,9646	9,9248
3	1,9243	1,9950	2,0719	2,1562	2,2494	2,3534	2,4708	2,6054	2,7626	2,9505	3,1824	4,5407	5,8409
4	1,7782	1,8375	1,9016	1,9712	2,0475	2,1318	2,2261	2,3329	2,4559	2,6008	2,7764	3,7469	4,6041
5	1,6994	1,7529	1,8104	1,8727	1,9405	2,0150	2,0978	2,1910	2,2974	2,4216	2,5706	3,3649	4,0321
6	1,6502	1,7002	1,7538	1,8117	1,8744	1,9432	2,0192	2,1043	2,2011	2,3133	2,4469	3,1427	3,7074
7	1,6166	1,6643	1,7153	1,7702	1,8297	1,8946	1,9662	2,0460	2,1365	2,2409	2,3646	2,9980	3,4995
8	1,5922	1,6383	1,6874	1,7402	1,7973	1,8595	1,9280	2,0042	2,0902	2,1892	2,3060	2,8965	3,3554
9	1,5737	1,6185	1,6663	1,7176	1,7729	1,8331	1,8992	1,9727	2,0554	2,1504	2,2622	2,8214	3,2498
10	1,5592	1,6031	1,6498	1,6998	1,7538	1,8125	1,8768	1,9481	2,0283	2,1202	**2,2281**	2,7638	3,1693
11	1,5476	1,5906	1,6365	1,6856	1,7385	1,7959	1,8588	1,9284	2,0067	2,0961	2,2010	2,7181	3,1058
12	1,5380	1,5804	1,6256	1,6739	1,7259	1,7823	1,8440	1,9123	1,9889	2,0764	2,1788	2,6810	3,0545
13	1,5299	1,5718	1,6164	1,6641	1,7154	1,7709	1,8317	1,8989	1,9742	2,0600	2,1604	2,6503	3,0123
14	1,5231	1,5646	1,6087	1,6558	1,7064	1,7613	1,8213	1,8875	1,9617	2,0462	2,1448	2,6245	2,9768
15	1,5172	1,5583	1,6020	1,6487	1,6988	1,7531	1,8123	1,8777	1,9509	2,0343	2,1314	2,6025	2,9467
16	1,5121	1,5529	1,5962	1,6425	1,6921	1,7459	1,8046	1,8693	1,9417	2,0240	2,1199	2,5835	2,9208
17	1,5077	1,5482	1,5911	1,6370	1,6863	1,7396	1,7978	1,8619	1,9335	2,0150	2,1098	2,5669	2,8982
18	1,5037	1,5439	1,5867	1,6322	1,6812	1,7341	1,7918	1,8553	1,9264	2,0071	2,1009	2,5524	2,8784
19	1,5002	1,5402	1,5827	1,6280	1,6766	1,7291	1,7864	1,8495	1,9200	2,0000	2,0930	2,5395	2,8609
20	1,4970	1,5369	1,5791	1,6242	1,6725	1,7247	1,7816	1,8443	1,9143	1,9937	2,0860	2,5280	2,8453
21	1,4942	1,5338	1,5759	1,6207	1,6688	1,7207	1,7773	1,8397	1,9092	1,9880	2,0796	2,5176	2,8314
22	1,4916	1,5311	1,5730	1,6176	1,6655	1,7171	1,7734	1,8354	1,9045	1,9829	2,0739	2,5083	2,8188
23	1,4893	1,5286	1,5703	1,6148	1,6624	1,7139	1,7699	1,8316	1,9003	1,9782	2,0687	2,4999	2,8073
24	1,4871	1,5263	1,5679	1,6122	1,6596	1,7109	1,7667	1,8281	1,8965	1,9740	2,0639	2,4922	2,7969
25	1,4852	1,5242	1,5657	1,6098	1,6571	1,7081	1,7637	1,8248	1,8929	1,9701	2,0595	2,4851	2,7874
26	1,4834	1,5223	1,5636	1,6076	1,6547	1,7056	1,7610	1,8219	1,8897	1,9665	2,0555	2,4786	2,7787
27	1,4817	1,5205	1,5617	1,6056	1,6526	1,7033	1,7585	1,8191	1,8867	1,9632	2,0518	2,4727	2,7707
28	1,4801	1,5189	1,5600	1,6037	1,6506	1,7011	1,7561	1,8166	1,8839	1,9601	2,0484	2,4671	2,7633
29	1,4787	1,5174	1,5583	1,6020	1,6487	1,6991	1,7540	1,8142	1,8813	1,9573	2,0452	2,4620	2,7564
30	1,4774	1,5159	1,5568	1,6004	1,6470	1,6973	1,7520	1,8120	1,8789	1,9546	2,0423	2,4573	2,7500
50	1,4620	1,4996	1,5394	1,5818	1,6271	1,6759	1,7289	1,7870	1,8516	1,9244	2,0086	2,4033	2,6778
60	1,4582	1,4956	1,5352	1,5772	1,6222	1,6706	1,7232	1,7808	1,8448	1,9170	2,0003	2,3901	2,6603
70	1,4555	1,4927	1,5321	1,5740	1,6187	1,6669	1,7192	1,7765	1,8401	1,9118	1,9944	2,3808	2,6479
100	1,4507	1,4876	1,5267	1,5682	1,6125	1,6602	1,7120	1,7687	1,8315	1,9024	1,9840	2,3642	2,6259
5000	1,4398	1,4760	1,5144	1,5550	1,5985	1,6452	1,6957	1,7510	1,8123	1,8812	**1,9604**	2,3271	2,5768

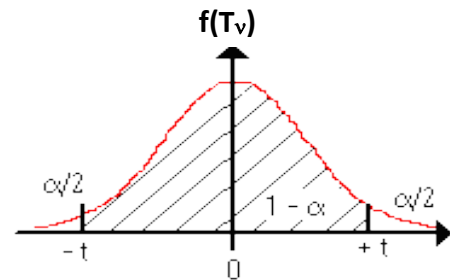Exemples : ν = 10 d.d.l.   P (T$_{10}$ ≤ t) = 0.975 ⇒ t = + 2.2281 et P (T$_{10}$ ≤ - t) = 0.025 ⇒ t = - 2.2281

Approximation par une loi normale : pour n = ν ≈ 5000 d.l.l. on a P (T$_{5000}$ ≤ t) = 0.975 ⇒ t = + 1.9604

Table de la Loi de Student

Fractiles de la loi de Student à ν degrés de liberté : valeur du fractile t ayant la probabilité α d'être dépassée en valeur absolue :

$P(|T_\nu| > t) = 1 - P(|T_\nu| \le t) = \alpha$

$P(|T_\nu| \le t) = P(-t \le T_\nu \le t) = 1 - \alpha.$

ν \ α	0.90	0.80	0.70	0.60	0.50	0.40	0.30	0.20	0.10	0.05	0.02	0.01	0.005	0.001
1	0.1584	0.3249	0.5095	0.7265	1	1.3764	1.9626	3.0777	6.3137	12.706	31.821	63.656	127.32	636.58
2	0.1421	0.2887	0.4447	0.6172	0.8165	1.0607	1.3862	1.8856	2.92	4.3027	6.9645	9.925	14.089	31.6
3	0.1366	0.2767	0.4242	0.5844	0.7649	0.9785	1.2498	1.6377	2.3534	3.1824	4.5407	5.8408	7.4532	12.924
4	0.1338	0.2707	0.4142	0.5686	0.7407	0.941	1.1896	1.5332	2.1318	2.7765	3.7469	4.6041	5.5975	8.6101
5	0.1322	0.2672	0.4082	0.5594	0.7267	0.9195	1.1558	1.4759	2.015	2.5706	3.3649	4.0321	4.7733	6.8685
6	0.1311	0.2648	0.4043	0.5534	0.7176	0.9057	1.1342	1.4398	1.9432	2.4469	3.1427	3.7074	4.3168	5.9587
7	0.1303	0.2632	0.4015	0.5491	0.7111	0.896	1.1192	1.4149	1.8946	2.3646	2.9979	3.4995	4.0294	5.4081
8	0.1297	0.2619	0.3995	0.5459	0.7064	0.8889	1.1081	1.3968	1.8595	2.306	2.8965	3.3554	3.8325	5.0414
9	0.1293	0.261	0.3979	0.5435	0.7027	0.8834	1.0997	1.383	1.8331	2.2622	2.8214	3.2498	3.6896	4.7809
10	0.1289	0.2602	0.3966	0.5415	0.6998	0.8791	1.0931	1.3722	**1.8125**	**2.2281**	2.7638	3.1693	3.5814	4.5868
11	0.1286	0.2596	0.3956	0.5399	0.6974	0.8755	1.0877	1.3634	1.7959	2.201	2.7181	3.1058	3.4966	4.4369
12	0.1283	0.259	0.3947	0.5386	0.6955	0.8726	1.0832	1.3562	1.7823	2.1788	2.681	3.0545	3.4284	4.3178
13	0.1281	0.2586	0.394	0.5375	0.6938	0.8702	1.0795	1.3502	1.7709	2.1604	2.6503	3.0123	3.3725	4.2209
14	0.128	0.2582	0.3933	0.5366	0.6924	0.8681	1.0763	1.345	1.7613	2.1448	2.6245	2.9768	3.3257	4.1403
15	0.1278	0.2579	0.3928	0.5357	0.6912	0.8662	1.0735	1.3406	1.7531	2.1315	2.6025	2.9467	3.286	4.0728
16	0.1277	0.2576	0.3923	0.535	0.6901	0.8647	1.0711	1.3368	1.7459	2.1199	2.5835	2.9208	3.252	4.0149
17	0.1276	0.2573	0.3919	0.5344	0.6892	0.8633	1.069	1.3334	1.7396	2.1098	2.5669	2.8982	3.2224	3.9651
18	0.1274	0.2571	0.3915	0.5338	0.6884	0.862	1.0672	1.3304	1.7341	2.1009	2.5524	2.8784	3.1966	3.9217
19	0.1274	0.2569	0.3912	0.5333	0.6876	0.861	1.0655	1.3277	1.7291	2.093	2.5395	2.8609	3.1737	3.8833
20	0.1273	0.2567	0.3909	0.5329	0.687	0.86	1.064	1.3253	1.7247	2.086	2.528	2.8453	3.1534	3.8496
21	0.1272	0.2566	0.3906	0.5325	0.6864	0.8591	1.0627	1.3232	1.7207	2.0796	2.5176	2.8314	3.1352	3.8193
22	0.1271	0.2564	0.3904	0.5321	0.6858	0.8583	1.0614	1.3212	1.7171	2.0739	2.5083	2.8188	3.1188	3.7922
23	0.1271	0.2563	0.3902	0.5317	0.6853	0.8575	1.0603	1.3195	1.7139	2.0687	2.4999	2.8073	3.104	3.7676
24	0.127	0.2562	0.39	0.5314	0.6848	0.8569	1.0593	1.3178	1.7109	2.0639	2.4922	2.797	3.0905	3.7454
25	0.1269	0.2561	0.3898	0.5312	0.6844	0.8562	1.0584	1.3163	1.7081	2.0595	2.4851	2.7874	3.0782	3.7251
26	0.1269	0.256	0.3896	0.5309	0.684	0.8557	1.0575	1.315	1.7056	2.0555	2.4786	2.7787	3.0669	3.7067
27	0.1268	0.2559	0.3894	0.5306	0.6837	0.8551	1.0567	1.3137	1.7033	2.0518	2.4727	2.7707	3.0565	3.6895
28	0.1268	0.2558	0.3893	0.5304	0.6834	0.8546	1.056	1.3125	1.7011	2.0484	2.4671	2.7633	3.047	3.6739
29	0.1268	0.2557	0.3892	0.5302	0.683	0.8542	1.0553	1.3114	1.6991	2.0452	2.462	2.7564	3.038	3.6595
30	0.1267	0.2556	0.389	0.53	0.6828	0.8538	1.0547	1.3104	1.6973	2.0423	2.4573	2.75	3.0298	3.646
50	0.1263	0.2547	0.3875	0.5278	0.6794	0.8489	1.0473	1.2987	1.6759	2.0086	2.4033	2.6778	2.937	3.496
60	0.1262	0.2545	0.3872	0.5272	0.6786	0.8477	1.0455	1.2958	1.6706	2.0003	2.3901	2.6603	2.9146	3.4602
70	0.1261	0.2543	0.3869	0.5268	0.678	0.8468	1.0442	1.2938	1.6669	1.9944	2.3808	2.6479	2.8987	3.435
80	0.1261	0.2542	0.3867	0.5265	0.6776	0.8461	1.0432	1.2922	1.6641	1.9901	2.3739	2.6387	2.887	3.4164
infini (loi normale)	0.1257	0.2533	0.3853	0.5244	0.6744	0.8416	1.0364	1.2816	1.6449	**1.96**	2.3264	2.5759	2.8072	3.2908

Exemples : $\nu = 10$ d.d.l. $P(|T_{10}| \le t) = P(-t \le T_{10} \le t) = 0.95 \Rightarrow t = \pm 2.2281$
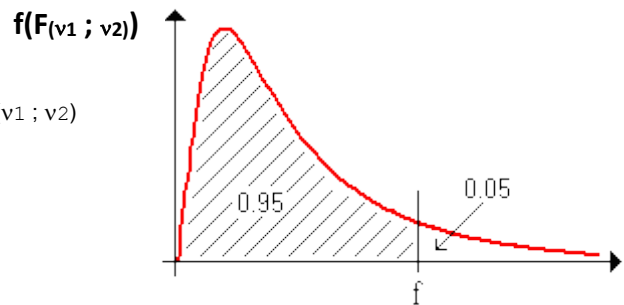
$P(T_{10} \le t) = 0.95 \Rightarrow t = +1.8125$

Table : Loi de Fisher-Snedecor

Valeur f de la variable de Fisher-Snedecor $F_{(\nu_1 \, ; \, \nu_2)}$ ayant la probabilité 0.05 d'être dépassée.

ν_1 : degrés de liberté du numérateur

ν_2 : degrés de liberté du dénominateur

$F(f) = P\,(\,F_{(\nu_1 \, . \, \nu_2)} \leq f\,) = 95\%$

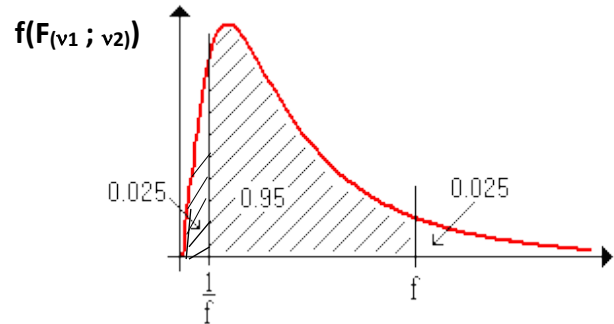| ν_2 \ ν_1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	161.45	199.50	215.71	224.58	230.16	233.99	236.77	238.88	240.54	241.88	242.98	243.90	244.69	245.36	245.95	246.47
2	18.51	19.00	19.16	19.25	19.30	19.33	19.35	19.37	19.38	19.40	19.40	19.41	19.42	19.42	19.43	19.43
3	10.13	9.55	9.28	9.12	9.01	8.94	8.89	8.85	8.81	8.79	8.76	8.74	8.73	8.71	8.70	8.69
4	7.71	6.94	6.59	6.39	6.26	6.16	6.09	6.04	6.00	5.96	5.94	5.91	5.89	5.87	5.86	5.84
5	6.61	5.79	5.41	5.19	5.05	4.95	4.88	4.82	4.77	**4.74**	4.70	4.68	4.66	4.64	4.62	4.60
6	5.99	5.14	4.76	4.53	4.39	4.28	4.21	4.15	4.10	4.06	4.03	4.00	3.98	3.96	3.94	3.92
7	5.59	4.74	4.35	4.12	3.97	3.87	3.79	3.73	3.68	3.64	3.60	3.57	3.55	3.53	3.51	3.49
8	5.32	4.46	4.07	3.84	3.69	3.58	3.50	3.44	3.39	3.35	3.31	3.28	3.26	3.24	3.22	3.20
9	5.12	4.26	3.86	3.63	3.48	3.37	3.29	3.23	3.18	3.14	3.10	3.07	3.05	3.03	3.01	2.99
10	4.96	4.10	3.71	3.48	**3.33**	3.22	3.14	3.07	3.02	2.98	2.94	2.91	2.89	2.86	2.85	2.83
11	4.84	3.98	3.59	3.36	3.20	3.09	3.01	2.95	2.90	2.85	2.82	2.79	2.76	2.74	2.72	2.70
12	4.75	3.89	3.49	3.26	3.11	3.00	2.91	2.85	2.80	2.75	2.72	2.69	2.66	2.64	2.62	2.60
13	4.67	3.81	3.41	3.18	3.03	2.92	2.83	2.77	2.71	2.67	2.63	2.60	2.58	2.55	2.53	2.51
14	4.60	3.74	3.34	3.11	2.96	2.85	2.76	2.70	2.65	2.60	2.57	2.53	2.51	2.48	2.46	2.44
15	4.54	3.68	3.29	3.06	2.90	2.79	2.71	2.64	2.59	2.54	2.51	2.48	2.45	2.42	2.40	2.38
16	4.49	3.63	3.24	3.01	2.85	2.74	2.66	2.59	2.54	2.49	2.46	2.42	2.40	2.37	2.35	2.33
17	4.45	3.59	3.20	2.96	2.81	2.70	2.61	2.55	2.49	2.45	2.41	2.38	2.35	2.33	2.31	2.29
18	4.41	3.55	3.16	2.93	2.77	2.66	2.58	2.51	2.46	2.41	2.37	2.34	2.31	2.29	2.27	2.25
19	4.38	3.52	3.13	2.90	2.74	2.63	2.54	2.48	2.42	2.38	2.34	2.31	2.28	2.26	2.23	2.21
20	4.35	3.49	3.10	2.87	2.71	2.60	2.51	2.45	2.39	2.35	2.31	2.28	2.25	2.22	2.20	2.18
21	4.32	3.47	3.07	2.84	2.68	2.57	2.49	2.42	2.37	2.32	2.28	2.25	2.22	2.20	2.18	2.16
22	4.30	3.44	3.05	2.82	2.66	2.55	2.46	2.40	2.34	2.30	2.26	2.23	2.20	2.17	2.15	2.13
23	4.28	3.42	3.03	2.80	2.64	2.53	2.44	2.37	2.32	2.27	2.24	2.20	2.18	2.15	2.13	2.11
24	4.26	3.40	3.01	2.78	2.62	2.51	2.42	2.36	2.30	2.25	2.22	2.18	2.15	2.13	2.11	2.09
25	4.24	3.39	2.99	2.76	2.60	2.49	2.40	2.34	2.28	2.24	2.20	2.16	2.14	2.11	2.09	2.07
26	4.23	3.37	2.98	2.74	2.59	2.47	2.39	2.32	2.27	2.22	2.18	2.15	2.12	2.09	2.07	2.05
27	4.21	3.35	2.96	2.73	2.57	2.46	2.37	2.31	2.25	2.20	2.17	2.13	2.10	2.08	2.06	2.04
28	4.20	3.34	2.95	2.71	2.56	2.45	2.36	2.29	2.24	2.19	2.15	2.12	2.09	2.06	2.04	2.02
29	4.18	3.33	2.93	2.70	2.55	2.43	2.35	2.28	2.22	2.18	2.14	2.10	2.08	2.05	2.03	2.01
30	4.17	3.32	2.92	2.69	2.53	2.42	2.33	2.27	2.21	2.16	2.13	2.09	2.06	2.04	2.01	1.99
32	4.15	3.29	2.90	2.67	2.51	2.40	2.31	2.24	2.19	2.14	2.10	2.07	2.04	2.01	1.99	1.97
34	4.13	3.28	2.88	2.65	2.49	2.38	2.29	2.23	2.17	2.12	2.08	2.05	2.02	1.99	1.97	1.95
36	4.11	3.26	2.87	2.63	2.48	2.36	2.28	2.21	2.15	2.11	2.07	2.03	2.00	1.98	1.95	1.93
38	4.10	3.24	2.85	2.62	2.46	2.35	2.26	2.19	2.14	2.09	2.05	2.02	1.99	1.96	1.94	1.92
40	4.08	3.23	2.84	2.61	2.45	2.34	2.25	2.18	2.12	2.08	2.04	2.00	1.97	1.95	1.92	1.90

Exemple : $\nu_1 = 5$ d.d.l. et $\nu_2 = 10$ d.d.l. $P\,(\,F_{5\,.\,10} \leq f\,) = 0.95 \;\Rightarrow\; f = 3.33$

Table : Loi de Fisher-Snedecor

Valeur f de la variable de Fisher-Snedecor
F (ν_1 ; ν_2) ayant la probabilité 0.025 d'être dépassée.

ν_1 : degrés de liberté du numérateur

ν_2 : degrés de liberté du dénominateur

$f(F_{(v1 ; v2)})$

ν_2 \ ν_1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	647.8	799.5	864.2	899.6	921.8	937.1	948.2	956.6	963.3	968.6	973.0	976.7	979.8	982.5	984.9	986.9
2	38.51	39.00	39.17	39.25	39.30	39.33	39.36	39.37	39.39	39.40	39.41	39.41	39.42	39.43	39.43	39.44
3	17.44	16.04	15.44	15.10	14.88	14.73	14.62	14.54	14.47	14.42	14.37	14.34	14.30	14.28	14.25	14.23
4	12.22	10.65	9.98	9.60	9.36	9.20	9.07	8.98	8.90	8.84	8.79	8.75	8.72	8.68	8.66	8.63
5	10.01	8.43	7.76	7.39	7.15	6.98	6.85	6.76	6.68	**6.62**	6.57	6.52	6.49	6.46	6.43	6.40
6	8.81	7.26	6.60	6.23	5.99	5.82	5.70	5.60	5.52	5.46	5.41	5.37	5.33	5.30	5.27	5.24
7	8.07	6.54	5.89	5.52	5.29	5.12	4.99	4.90	4.82	4.76	4.71	4.67	4.63	4.60	4.57	4.54
8	7.57	6.06	5.42	5.05	4.82	4.65	4.53	4.43	4.36	4.30	4.24	4.20	4.16	4.13	4.10	4.08
9	7.21	5.71	5.08	4.72	4.48	4.32	4.20	4.10	4.03	3.96	3.91	3.87	3.83	3.80	3.77	3.74
10	6.94	5.46	4.83	4.47	**4.24**	4.07	3.95	3.85	3.78	3.72	3.66	3.62	3.58	3.55	3.52	3.50
11	6.72	5.26	4.63	4.28	4.04	3.88	3.76	3.66	3.59	3.53	3.47	3.43	3.39	3.36	3.33	3.30
12	6.55	5.10	4.47	4.12	3.89	3.73	3.61	3.51	3.44	3.37	3.32	3.28	3.24	3.21	3.18	3.15
13	6.41	4.97	4.35	4.00	3.77	3.60	3.48	3.39	3.31	3.25	3.20	3.15	3.12	3.08	3.05	3.03
14	6.30	4.86	4.24	3.89	3.66	3.50	3.38	3.29	3.21	3.15	3.09	3.05	3.01	2.98	2.95	2.92
15	6.20	4.77	4.15	3.80	3.58	3.41	3.29	3.20	3.12	3.06	3.01	2.96	2.92	2.89	2.86	2.84
16	6.12	4.69	4.08	3.73	3.50	3.34	3.22	3.12	3.05	2.99	2.93	2.89	2.85	2.82	2.79	2.76
17	6.04	4.62	4.01	3.66	3.44	3.28	3.16	3.06	2.98	2.92	2.87	2.82	2.79	2.75	2.72	2.70
18	5.98	4.56	3.95	3.61	3.38	3.22	3.10	3.01	2.93	2.87	2.81	2.77	2.73	2.70	2.67	2.64
19	5.92	4.51	3.90	3.56	3.33	3.17	3.05	2.96	2.88	2.82	2.76	2.72	2.68	2.65	2.62	2.59
20	5.87	4.46	3.86	3.51	3.29	3.13	3.01	2.91	2.84	2.77	2.72	2.68	2.64	2.60	2.57	2.55
21	5.83	4.42	3.82	3.48	3.25	3.09	2.97	2.87	2.80	2.73	2.68	2.64	2.60	2.56	2.53	2.51
22	5.79	4.38	3.78	3.44	3.22	3.05	2.93	2.84	2.76	2.70	2.65	2.60	2.56	2.53	2.50	2.47
23	5.75	4.35	3.75	3.41	3.18	3.02	2.90	2.81	2.73	2.67	2.62	2.57	2.53	2.50	2.47	2.44
24	5.72	4.32	3.72	3.38	3.15	2.99	2.87	2.78	2.70	2.64	2.59	2.54	2.50	2.47	2.44	2.41
25	5.69	4.29	3.69	3.35	3.13	2.97	2.85	2.75	2.68	2.61	2.56	2.51	2.48	2.44	2.41	2.38
26	5.66	4.27	3.67	3.33	3.10	2.94	2.82	2.73	2.65	2.59	2.54	2.49	2.45	2.42	2.39	2.36
27	5.63	4.24	3.65	3.31	3.08	2.92	2.80	2.71	2.63	2.57	2.51	2.47	2.43	2.39	2.36	2.34
28	5.61	4.22	3.63	3.29	3.06	2.90	2.78	2.69	2.61	2.55	2.49	2.45	2.41	2.37	2.34	2.32

Exemples : ν_1 = 5 d.d.l. et ν_2 = 10 d.d.l. P ($F_{97.5\% ; 5 . 10}$ ≤ f) = 0.975 $\Rightarrow$ f = 4.24
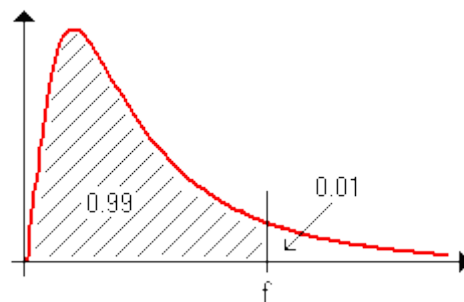
P ($F_{2.5\% ; 5 . 10}$ ≤ f') = 0.025

P ($F_{97.5\% ; 10 . 5}$ ≤ f) = 0.975 $\Rightarrow$ f = 6.62 $\Rightarrow$ f ' = 1 / f = 1 / 6.62 = 0.151

Table : Loi de Fisher-Snedecor

Valeur f de la variable de Fisher-Snedecor F (ν_1 ; ν_2)
ayant la probabilité 0.01 d'être dépassée.

ν_1 : degrés de liberté du numérateur

ν_2 : degrés de liberté du dénominateur

ν_2 \ ν_1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	4052	4999	5403	5624	5763	5858	5928	5980	6022	6055	6083	6106	6125	6143	6156
2	98.50	99.00	99.16	99.25	99.30	99.33	99.36	99.38	99.39	99.40	99.41	99.42	99.42	99.43	99.43
3	34.12	30.82	29.46	28.71	28.24	27.91	27.67	27.49	27.34	27.23	27.13	27.05	26.98	26.92	26.87
4	21.20	18.00	16.69	15.98	15.52	15.21	14.98	14.80	14.66	14.55	14.45	14.37	14.31	14.25	14.20
5	16.26	13.27	12.06	11.39	10.97	10.67	10.46	10.29	10.16	10.05	9.96	9.89	9.82	9.77	9.72
6	13.75	10.92	9.78	9.15	8.75	8.47	8.26	8.10	7.98	7.87	7.79	7.72	7.66	7.60	7.56
7	12.25	9.55	8.45	7.85	7.46	7.19	6.99	6.84	6.72	6.62	6.54	6.47	6.41	6.36	6.31
8	11.26	8.65	7.59	7.01	6.63	6.37	6.18	6.03	5.91	5.81	5.73	5.67	5.61	5.56	5.52
9	10.56	8.02	6.99	6.42	6.06	5.80	5.61	5.47	5.35	5.26	5.18	5.11	5.05	5.01	4.96
10	10.04	7.56	6.55	5.99	5.64	5.39	5.20	5.06	4.94	4.85	4.77	4.71	4.65	4.60	4.56
11	9.65	7.21	6.22	5.67	5.32	5.07	4.89	4.74	4.63	4.54	4.46	4.40	4.34	4.29	4.25
12	9.33	6.93	5.95	5.41	5.06	4.82	4.64	4.50	4.39	4.30	4.22	4.16	4.10	4.05	4.01
13	9.07	6.70	5.74	5.21	4.86	4.62	4.44	4.30	4.19	4.10	4.02	3.96	3.91	3.86	3.82
14	8.86	6.51	5.56	5.04	4.69	4.46	4.28	4.14	4.03	3.94	3.86	3.80	3.75	3.70	3.66
15	8.68	6.36	5.42	4.89	4.56	4.32	4.14	4.00	3.89	3.80	3.73	3.67	3.61	3.56	3.52
16	8.53	6.23	5.29	4.77	4.44	4.20	4.03	3.89	3.78	3.69	3.62	3.55	3.50	3.45	3.41
17	8.40	6.11	5.19	4.67	4.34	4.10	3.93	3.79	3.68	3.59	3.52	3.46	3.40	3.35	3.31
18	8.29	6.01	5.09	4.58	4.25	4.01	3.84	3.71	3.60	3.51	3.43	3.37	3.32	3.27	3.23
19	8.18	5.93	5.01	4.50	4.17	3.94	3.77	3.63	3.52	3.43	3.36	3.30	3.24	3.19	3.15
20	8.10	5.85	4.94	4.43	4.10	3.87	3.70	3.56	3.46	3.37	3.29	3.23	3.18	3.13	3.09
21	8.02	5.78	4.87	4.37	4.04	3.81	3.64	3.51	3.40	3.31	3.24	3.17	3.12	3.07	3.03
22	7.95	5.72	4.82	4.31	3.99	3.76	3.59	3.45	3.35	3.26	3.18	3.12	3.07	3.02	2.98
23	7.88	5.66	4.76	4.26	3.94	3.71	3.54	3.41	3.30	3.21	3.14	3.07	3.02	2.97	2.93
24	7.82	5.61	4.72	4.22	3.90	3.67	3.50	3.36	3.26	3.17	3.09	3.03	2.98	2.93	2.89
25	7.77	5.57	4.68	4.18	3.85	3.63	3.46	3.32	3.22	3.13	3.06	2.99	2.94	2.89	2.85
26	7.72	5.53	4.64	4.14	3.82	3.59	3.42	3.29	3.18	3.09	3.02	2.96	2.90	2.86	2.81
27	7.68	5.49	4.60	4.11	3.78	3.56	3.39	3.26	3.15	3.06	2.99	2.93	2.87	2.82	2.78
28	7.64	5.45	4.57	4.07	3.75	3.53	3.36	3.23	3.12	3.03	2.96	2.90	2.84	2.79	2.75
29	7.60	5.42	4.54	4.04	3.73	3.50	3.33	3.20	3.09	3.00	2.93	2.87	2.81	2.77	2.73
30	7.56	5.39	4.51	4.02	3.70	3.47	3.30	3.17	3.07	2.98	2.91	2.84	2.79	2.74	2.70
40	7.31	5.18	4.31	3.83	3.51	3.29	3.12	2.99	2.89	2.80	2.73	2.66	2.61	2.56	2.52

Exemple : $\nu_1 = 5$ d.d.l. et $\nu_2 = 10$ d.d.l. P ($F_{5 . 10}$ $\leq$ f) = 0.99 $\Rightarrow$ f = 5.64