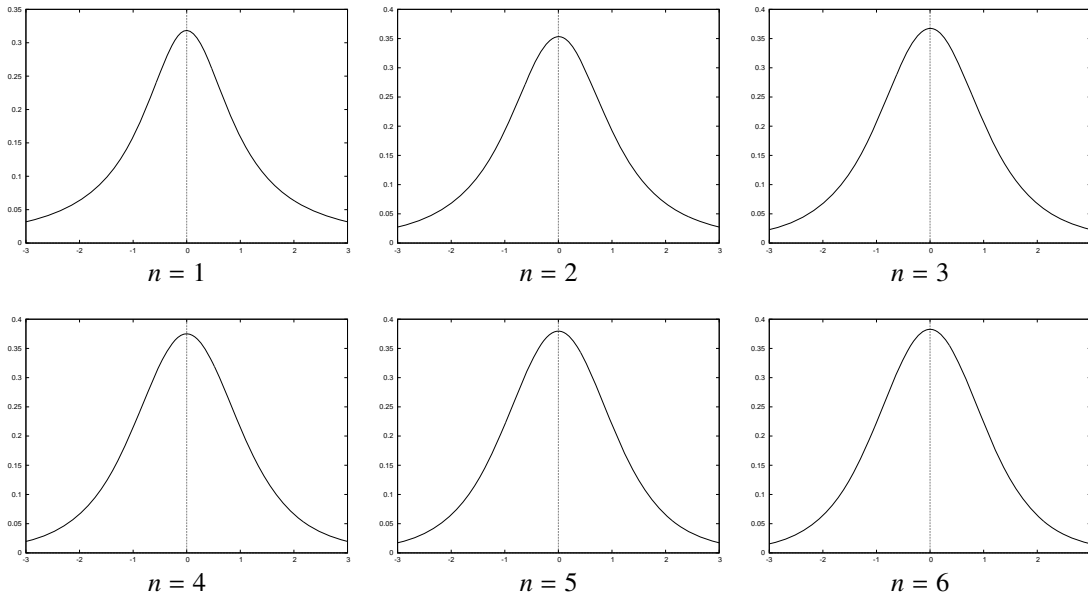


$$f_n(t) = \frac{1}{\sqrt{n}B(\frac{1}{2}, \frac{n}{2})} \left(\frac{t^2}{n} + 1\right)^{-\frac{n+1}{2}}$$



正規母集団 $N(m, \sigma^2)$ から n 個の独立な標本 X_1, X_2, \dots, X_n を抽出し、その標本平均を \bar{X}_n 、標本分散を \bar{V}_n とおくと、 $(\bar{X}_n - m) \sqrt{\frac{n}{\bar{V}_n}}$ は自由度 $n - 1$ の t 分布に従う：

$$P\left(a \leq (\bar{X}_n - m) \sqrt{\frac{n}{\bar{V}_n}} \leq b\right) = \int_a^b f_{n-1}(t) dt$$

$$\int_x^\infty f_n(t) dt = \alpha$$

となる点 x を自由度 n の t 分布の 100α パーセント点と呼ぶ。

$$\int_{\{|t| \geq x\}} f_n(t) dt = 2\alpha$$

を両側 100α パーセント点と呼ぶ。例えば、

- 自由度 2 の t 分布の 10% 点は 1.8856 :

$$\int_{1.8856}^\infty f_2(t) dt = 0.10$$

- 自由度 20 の t 分布の両側 5% 点は 2.0860 :

$$\int_{\{|t| \geq 2.0860\}} f_{20}(t) dt = 0.05$$

である。

Maxima:

load(distrib);

quantile_student_t(1 - α , n);

α	0.250	0.200	0.150	0.100	0.050	0.025	0.010	0.005	0.0005
2α	0.500	0.400	0.300	0.200	0.100	0.050	0.020	0.010	0.001
1	1.0000	1.3764	1.9626	3.0777	6.3138	12.7062	31.8205	63.6567	636.6192
2	0.8165	1.0607	1.3862	1.8856	2.9200	4.3027	6.9646	9.9248	31.5991
3	0.7649	0.9785	1.2498	1.6377	2.3534	3.1824	4.5407	5.8409	12.9240
4	0.7407	0.9410	1.1896	1.5332	2.1318	2.7764	3.7469	4.6041	8.6103
5	0.7267	0.9195	1.1558	1.4759	2.0150	2.5706	3.3649	4.0321	6.8688
6	0.7176	0.9057	1.1342	1.4398	1.9432	2.4469	3.1427	3.7074	5.9588
7	0.7111	0.8960	1.1192	1.4149	1.8946	2.3646	2.9980	3.4995	5.4079
8	0.7064	0.8889	1.1081	1.3968	1.8595	2.3060	2.8965	3.3554	5.0413
9	0.7027	0.8834	1.0997	1.3830	1.8331	2.2622	2.8214	3.2498	4.7809
10	0.6998	0.8791	1.0931	1.3722	1.8125	2.2281	2.7638	3.1693	4.5869
11	0.6974	0.8755	1.0877	1.3634	1.7959	2.2010	2.7181	3.1058	4.4370
12	0.6955	0.8726	1.0832	1.3562	1.7823	2.1788	2.6810	3.0545	4.3178
13	0.6938	0.8702	1.0795	1.3502	1.7709	2.1604	2.6503	3.0123	4.2208
14	0.6924	0.8681	1.0763	1.3450	1.7613	2.1448	2.6245	2.9768	4.1405
15	0.6912	0.8662	1.0735	1.3406	1.7531	2.1314	2.6025	2.9467	4.0728
16	0.6901	0.8647	1.0711	1.3368	1.7459	2.1199	2.5835	2.9208	4.0150
17	0.6892	0.8633	1.0690	1.3334	1.7396	2.1098	2.5669	2.8982	3.9651
18	0.6884	0.8620	1.0672	1.3304	1.7341	2.1009	2.5524	2.8784	3.9216
19	0.6876	0.8610	1.0655	1.3277	1.7291	2.0930	2.5395	2.8609	3.8834
20	0.6870	0.8600	1.0640	1.3253	1.7247	2.0860	2.5280	2.8453	3.8495
21	0.6864	0.8591	1.0627	1.3232	1.7207	2.0796	2.5176	2.8314	3.8193
22	0.6858	0.8583	1.0614	1.3212	1.7171	2.0739	2.5083	2.8188	3.7921
23	0.6853	0.8575	1.0603	1.3195	1.7139	2.0687	2.4999	2.8073	3.7676
24	0.6848	0.8569	1.0593	1.3178	1.7109	2.0639	2.4922	2.7969	3.7454
25	0.6844	0.8562	1.0584	1.3163	1.7081	2.0595	2.4851	2.7874	3.7251
26	0.6840	0.8557	1.0575	1.3150	1.7056	2.0555	2.4786	2.7787	3.7066
27	0.6837	0.8551	1.0567	1.3137	1.7033	2.0518	2.4727	2.7707	3.6896
28	0.6834	0.8546	1.0560	1.3125	1.7011	2.0484	2.4671	2.7633	3.6739
29	0.6830	0.8542	1.0553	1.3114	1.6991	2.0452	2.4620	2.7564	3.6594
30	0.6828	0.8538	1.0547	1.3104	1.6973	2.0423	2.4573	2.7500	3.6460
31	0.6825	0.8534	1.0541	1.3095	1.6955	2.0395	2.4528	2.7440	3.6335
32	0.6822	0.8530	1.0535	1.3086	1.6939	2.0369	2.4487	2.7385	3.6218
33	0.6820	0.8526	1.0530	1.3077	1.6924	2.0345	2.4448	2.7333	3.6109
34	0.6818	0.8523	1.0525	1.3070	1.6909	2.0322	2.4411	2.7284	3.6007
35	0.6816	0.8520	1.0520	1.3062	1.6896	2.0301	2.4377	2.7238	3.5911
36	0.6814	0.8517	1.0516	1.3055	1.6883	2.0281	2.4345	2.7195	3.5821
37	0.6812	0.8514	1.0512	1.3049	1.6871	2.0262	2.4314	2.7154	3.5737
38	0.6810	0.8512	1.0508	1.3042	1.6860	2.0244	2.4286	2.7116	3.5657

α	0.250	0.200	0.150	0.100	0.050	0.025	0.010	0.005	0.0005
2α	0.500	0.400	0.300	0.200	0.100	0.050	0.020	0.010	0.001
39	0.6808	0.8509	1.0504	1.3036	1.6849	2.0227	2.4258	2.7079	3.5581
40	0.6807	0.8507	1.0500	1.3031	1.6839	2.0211	2.4233	2.7045	3.5510
41	0.6805	0.8505	1.0497	1.3025	1.6829	2.0195	2.4208	2.7012	3.5442
42	0.6804	0.8503	1.0494	1.3020	1.6820	2.0181	2.4185	2.6981	3.5377
43	0.6802	0.8501	1.0491	1.3016	1.6811	2.0167	2.4162	2.6951	3.5316
44	0.6801	0.8499	1.0488	1.3011	1.6802	2.0154	2.4141	2.6923	3.5258
45	0.6800	0.8497	1.0485	1.3006	1.6794	2.0141	2.4121	2.6896	3.5203
46	0.6799	0.8495	1.0482	1.3002	1.6787	2.0129	2.4102	2.6870	3.5150
47	0.6797	0.8493	1.0480	1.2998	1.6779	2.0117	2.4083	2.6846	3.5099
48	0.6796	0.8492	1.0478	1.2994	1.6772	2.0106	2.4066	2.6822	3.5051
49	0.6795	0.8490	1.0475	1.2991	1.6766	2.0096	2.4049	2.6800	3.5004
50	0.6794	0.8489	1.0473	1.2987	1.6759	2.0086	2.4033	2.6778	3.4960
51	0.6793	0.8487	1.0471	1.2984	1.6753	2.0076	2.4017	2.6757	3.4918
52	0.6792	0.8486	1.0469	1.2980	1.6747	2.0066	2.4002	2.6737	3.4877
53	0.6791	0.8485	1.0467	1.2977	1.6741	2.0057	2.3988	2.6718	3.4838
54	0.6791	0.8483	1.0465	1.2974	1.6736	2.0049	2.3974	2.6700	3.4800
55	0.6790	0.8482	1.0463	1.2971	1.6730	2.0040	2.3961	2.6682	3.4764
56	0.6789	0.8481	1.0461	1.2969	1.6725	2.0032	2.3948	2.6665	3.4729
57	0.6788	0.8480	1.0459	1.2966	1.6720	2.0025	2.3936	2.6649	3.4696
58	0.6787	0.8479	1.0458	1.2963	1.6716	2.0017	2.3924	2.6633	3.4663
59	0.6787	0.8478	1.0456	1.2961	1.6711	2.0010	2.3912	2.6618	3.4632
60	0.6786	0.8477	1.0455	1.2958	1.6706	2.0003	2.3901	2.6603	3.4602
61	0.6785	0.8476	1.0453	1.2956	1.6702	1.9996	2.3890	2.6589	3.4573
62	0.6785	0.8475	1.0452	1.2954	1.6698	1.9990	2.3880	2.6575	3.4545
63	0.6784	0.8474	1.0450	1.2951	1.6694	1.9983	2.3870	2.6561	3.4518
64	0.6783	0.8473	1.0449	1.2949	1.6690	1.9977	2.3860	2.6549	3.4491
65	0.6783	0.8472	1.0448	1.2947	1.6686	1.9971	2.3851	2.6536	3.4466
66	0.6782	0.8471	1.0446	1.2945	1.6683	1.9966	2.3842	2.6524	3.4441
67	0.6782	0.8470	1.0445	1.2943	1.6679	1.9960	2.3833	2.6512	3.4417
68	0.6781	0.8469	1.0444	1.2941	1.6676	1.9955	2.3824	2.6501	3.4394
69	0.6781	0.8469	1.0443	1.2939	1.6672	1.9949	2.3816	2.6490	3.4372
70	0.6780	0.8468	1.0442	1.2938	1.6669	1.9944	2.3808	2.6479	3.4350
71	0.6780	0.8467	1.0441	1.2936	1.6666	1.9939	2.3800	2.6469	3.4329
72	0.6779	0.8466	1.0440	1.2934	1.6663	1.9935	2.3793	2.6459	3.4308
73	0.6779	0.8466	1.0438	1.2933	1.6660	1.9930	2.3785	2.6449	3.4289
74	0.6778	0.8465	1.0437	1.2931	1.6657	1.9925	2.3778	2.6439	3.4269
75	0.6778	0.8464	1.0436	1.2929	1.6654	1.9921	2.3771	2.6430	3.4250
76	0.6777	0.8464	1.0436	1.2928	1.6652	1.9917	2.3764	2.6421	3.4232

α	0.250	0.200	0.150	0.100	0.050	0.025	0.010	0.005	0.0005
2α	0.500	0.400	0.300	0.200	0.100	0.050	0.020	0.010	0.001
77	0.6777	0.8463	1.0435	1.2926	1.6649	1.9913	2.3758	2.6412	3.4214
78	0.6776	0.8463	1.0434	1.2925	1.6646	1.9908	2.3751	2.6403	3.4197
79	0.6776	0.8462	1.0433	1.2924	1.6644	1.9904	2.3745	2.6395	3.4180
80	0.6776	0.8461	1.0432	1.2922	1.6641	1.9901	2.3739	2.6387	3.4163
81	0.6775	0.8461	1.0431	1.2921	1.6639	1.9897	2.3733	2.6379	3.4147
82	0.6775	0.8460	1.0430	1.2920	1.6636	1.9893	2.3727	2.6371	3.4132
83	0.6775	0.8460	1.0429	1.2918	1.6634	1.9890	2.3721	2.6364	3.4116
84	0.6774	0.8459	1.0429	1.2917	1.6632	1.9886	2.3716	2.6356	3.4102
85	0.6774	0.8459	1.0428	1.2916	1.6630	1.9883	2.3710	2.6349	3.4087
86	0.6774	0.8458	1.0427	1.2915	1.6628	1.9879	2.3705	2.6342	3.4073
87	0.6773	0.8458	1.0426	1.2914	1.6626	1.9876	2.3700	2.6335	3.4059
88	0.6773	0.8457	1.0426	1.2912	1.6624	1.9873	2.3695	2.6329	3.4045
89	0.6773	0.8457	1.0425	1.2911	1.6622	1.9870	2.3690	2.6322	3.4032
90	0.6772	0.8456	1.0424	1.2910	1.6620	1.9867	2.3685	2.6316	3.4019
91	0.6772	0.8456	1.0424	1.2909	1.6618	1.9864	2.3680	2.6309	3.4007
92	0.6772	0.8455	1.0423	1.2908	1.6616	1.9861	2.3676	2.6303	3.3994
93	0.6771	0.8455	1.0422	1.2907	1.6614	1.9858	2.3671	2.6297	3.3982
94	0.6771	0.8455	1.0422	1.2906	1.6612	1.9855	2.3667	2.6291	3.3971
95	0.6771	0.8454	1.0421	1.2905	1.6611	1.9853	2.3662	2.6286	3.3959
96	0.6771	0.8454	1.0421	1.2904	1.6609	1.9850	2.3658	2.6280	3.3948
97	0.6770	0.8453	1.0420	1.2903	1.6607	1.9847	2.3654	2.6275	3.3937
98	0.6770	0.8453	1.0419	1.2902	1.6606	1.9845	2.3650	2.6269	3.3926
99	0.6770	0.8453	1.0419	1.2902	1.6604	1.9842	2.3646	2.6264	3.3915
100	0.6770	0.8452	1.0418	1.2901	1.6602	1.9840	2.3642	2.6259	3.3905
110	0.6767	0.8449	1.0413	1.2893	1.6588	1.9818	2.3607	2.6213	3.3812
120	0.6765	0.8446	1.0409	1.2886	1.6577	1.9799	2.3578	2.6174	3.3735
130	0.6764	0.8444	1.0406	1.2881	1.6567	1.9784	2.3554	2.6142	3.3669
140	0.6762	0.8442	1.0403	1.2876	1.6558	1.9771	2.3533	2.6114	3.3614
150	0.6761	0.8440	1.0400	1.2872	1.6551	1.9759	2.3515	2.6090	3.3566
160	0.6760	0.8439	1.0398	1.2869	1.6544	1.9749	2.3499	2.6069	3.3524
170	0.6759	0.8437	1.0396	1.2866	1.6539	1.9740	2.3485	2.6051	3.3487
180	0.6759	0.8436	1.0394	1.2863	1.6534	1.9732	2.3472	2.6034	3.3454
190	0.6758	0.8435	1.0393	1.2860	1.6529	1.9725	2.3461	2.6020	3.3425
200	0.6757	0.8434	1.0391	1.2858	1.6525	1.9719	2.3451	2.6006	3.3398

この表は試験時に持参してかまいません。