Figure 13.13. SIX PERCENTILES FOR THE F DISTRIBUTION [F_{ν_1,ν_2}]

[Calculated with *qf* in **R** Version 3.3.2 using 17-digit arithmetic; the accuracy of all digits in the table entries has *not* been verified]

Each table entry is the value (y) of the random variable $Y \sim F_{\nu_1,\nu_2}$ such that $\Pr(Y \le y) = p^*$ ($p^* = 0.9, \ldots, .9999$) (ν_1 is the numerator, ν_2 the denominator, degrees of freedom)

$Df \to \nu_1$ / ν_2	p^*	ν_1 1	2	3	4	5	6	7	8	9	10	12	15	20	25	30	40	50	60	75	100	175	350	1,000	
1	.9	39.863	49.500	53.593	55.833	57.240	58.204	58.906	59.439	59.858	60.195	60.705	61.220	61.740	62.055	62.265	62.529	62.688	62.794	62.901	63.007	63.145	63.236	63.296	1
	.95	161.45	199.50	215.71	224.58	230.16	233.99	236.77	238.88	240.54	241.88	243.91	245.95	248.01	249.26	250.10	251.14	251.77	252.20	252.62	253.04	253.59	253.95	254.19	
	.975	647.79	799.50	864.16	899.58	921.85	937.11	948.22	956.66	963.28	968.63	976.71	984.87	993.10	998.08	1001.41	1005.60	1008.12	1009.80	1011.49	1013.17	1015.35	1016.80	1017.75	
	.99	4052.2	4999.5	5403.4	5624.6	5763.6	5859.0	5928.4	5981.1	6022.5	6055.8	6106.3	6157.3	6208.7	6239.8	6260.6	6286.8	6302.5	6313.0	6323.6	6334.1	6347.7	6356.8	6362.7	
	.999	405284	499999	540379	562500	576405	585937	592873	598144	602284	605621	610668	615764	620908	624017	626099	628712	630285	631337	632390	633444	634803	635711	636301	
	.9999	40528473	50000000	54037964	56250000	57640495	58593750	59287367	59814453	60228436	60562133	61066818	61576401	62090802	62401717	62609930	62871237	63028572	63133689	63238988	63344467	63480346	63571096	63630154	
2	.9	8.5263	9.0000	9.1618	9.2434	9.2926	9.3255	9.3491	9.3668	9.3805	9.3916	9.4081	9.4247	9.4413	9.4513	9.4579	9.4662	9.4712	9.4746	9.4779	9.4812	9.4855	9.4884	9.4902	2
	.95	18.513	19.000	19.164	19.247	19.296	19.330	19.353	19.371	19.385	19.396	19.413	19.429	19.446	19.456	19.462	19.471	19.476	19.479	19.482	19.486	19.490	19.493	19.495	
	.975	38.506	39.000	39.165	39.248	39.298	39.331	39.355	39.373	39.387	39.398	39.415	39.431	39.448	39.458	39.465	39.473	39.478	39.481	39.485	39.488	39.492	39.495	39.497	
	.99	98.503	99.000	99.166	99.249	99.299	99.333	99.356	99.374	99.388	99.399	99.416	99.433	99.449	99.459	99.466	99.474	99.479	99.482	99.486	99.489	99.493	99.496	99.498	
	.999	998.50	999.00	999.17	999.25	999.30	999.33	999.36	999.37	999.39	999.40	999.42	999.43	999.45	999.46	999.47	999.47	999.48	999.48	999.49	999.49	999.49	999.50	999.50	
	.9999	9998.5	9999.0	9999.2	9999.2	9999.3	9999.3	9999.4	9999.4	9999.4	9999.4	9999.4	9999.4	9999.4	9999.5	9999.5	9999.5	9999.5	9999.5	9999.5	9999.5	9999.5	9999.5	9999.5	
3	.9	5.5383	5.4624	5.3908	5.3426	5.3092	5.2847	5.2662	5.2517	5.2400	5.2304	5.2156	5.2003	5.1845	5.1747	5.1681	5.1597	5.1546	5.1512	5.1477	5.1443	5.1398	5.1367	5.1348	3
	.95	10.1280	9.5521	9.2766	9.1172	9.0135	8.9406	8.8867	8.8452	8.8123	8.7855	8.7446	8.7029	8.6602	8.6341	8.6166	8.5944	8.5810	8.5720	8.5630	8.5539	8.5422	8.5343	8.5292	
	.975	17.443	16.044	15.439	15.101	14.885	14.735	14.624	14.540	14.473	14.419	14.337	14.253	14.167	14.115	14.081	14.037	14.010	13.992	13.974	13.956	13.933	13.918	13.908	
	.99	34.116	30.817	29.457	28.710	28.237	27.911	27.672	27.489	27.345	27.229	27.052	26.872	26.690	26.579	26.505	26.411	26.354	26.316	26.278	26.240	26.191	26.158	26.137	
	.999	167.03	148.50	141.11	137.10	134.58	132.85	131.58	130.62	129.86	129.25	128.32	127.37	126.42	125.84	125.45	124.96	124.66	124.47	124.27	124.07	123.81	123.64	123.53	
	.9999	784.01	694.74	659.34	640.19	628.17	619.91	613.88	609.29	605.67	602.75	598.33	593.84	589.30	586.54	584.69	582.36	580.96	580.02	579.08	578.13	576.91	576.10	575.57	
4	.9	4.5448	4.3246	4.1909	4.1072	4.0506	4.0097	3.9790	3.9549	3.9357	3.9199	3.8955	3.8704	3.8443	3.8283	3.8174	3.8036	3.7952	3.7896	3.7839	3.7782	3.7707	3.7657	3.7625	4
	.95	7.7086	6.9443	6.5914	6.3882	6.2561	6.1631	6.0942	6.0410	5.9988	5.9644	5.9117	5.8578	5.8025	5.7687	5.7459	5.7170	5.6995	5.6877	5.6759	5.6641	5.6487	5.6384	5.6317	
	.975	12.2179	10.6491	9.9792	9.6045	9.3645	9.1973	9.0741	8.9796	8.9047	8.8439	8.7512	8.6565	8.5599	8.5010	8.4613	8.4111	8.3808	8.3604	8.3400	8.3195	8.2929	8.2752	8.2636	
	.99	21.198	18.000	16.694	15.977	15.522	15.207	14.976	14.799	14.659	14.546	14.374	14.198	14.020	13.911	13.838	13.745	13.690	13.652	13.615	13.577	13.528	13.496	13.475	
	.999	74.137	61.246	56.177	53.436	51.712	50.525	49.658	48.996	48.475	48.053	47.412	46.761	46.100	45.699	45.429	45.089	44.883	44.746	44.608	44.469	44.290	44.171	44.093	
	.9999	241.62	198.00	181.02	171.87	166.13	162.19	159.31	157.11	155.38	153.98	151.86	149.71	147.52	146.19	145.30	144.18	143.50	143.05	142.59	142.13	141.54	141.15	140.89	
5	.9	4.0604	3.7797	3.6195	3.5202	3.4530	3.4045	3.3679	3.3393	3.3163	3.2974	3.2682	3.2380	3.2067	3.1873	3.1741	3.1573	3.1471	3.1402	3.1333	3.1263	3.1172	3.1111	3.1072	5
	.95	6.6079	5.7861	5.4095	5.1922	5.0503	4.9503	4.8759	4.8183	4.7725	4.7351	4.6777	4.6188	4.5581	4.5209	4.4957	4.4638	4.4444	4.4314	4.4183	4.4051	4.3880	4.3765	4.3690	
	.975	10.0070	8.4336	7.7636	7.3879	7.1464	6.9777	6.8531	6.7572	6.6811	6.6192	6.5245	6.4277	6.3286	6.2679	6.2269	6.1750	6.1436	6.1225	6.1013	6.0800	6.0524	6.0339	6.0218	
F_{ν_1,ν_2}	.99	16.2582	13.2739	12.0600	11.3919	10.9670	10.6723	10.4555	10.2893	10.1578	10.0510	9.8883	9.7222	9.5526	9.4491	9.3793	9.2912	9.2378	9.2020	9.1660	9.1299	9.0832	9.0519	9.0314	F_{ν_1,ν_2}
	.999	47.181	37.122	33.202	31.085	29.752	28.834	28.163	27.649	27.244	26.917	26.418	25.911	25.395	25.080	24.869	24.602	24.441	24.333	24.224	24.115	23.974	23.880	23.819	
	.9999	124.941	97.027	86.292	80.527	76.911	74.426	72.611	71.226	70.133	69.250	67.908	66.544	65.157	64.313	63.746	63.031	62.598	62.309	62.018	61.726	61.349	61.097	60.933	
6	.9	3.7759	3.4633	3.2888	3.1808	3.1075	3.0546	3.0145	2.9830	2.9577	2.9369	2.9047	2.8712	2.8363	2.8147	2.8000	2.7812	2.7697	2.7620	2.7541	2.7463	2.7360	2.7291	2.7246	6
	.95	5.9874	5.1433	4.7571	4.5337	4.3874	4.2839	4.2067	4.1468	4.0990	4.0600	3.9999	3.9381	3.8742	3.8348	3.8082	3.7743	3.7537	3.7398	3.7258	3.7117	3.6935	3.6812	3.6732	
	.975	8.8131	7.2599	6.5988	6.2272	5.9876	5.8198	5.6955	5.5996	5.5234	5.4613	5.3662	5.2687	5.1684	5.1069	5.0652	5.0125	4.9804	4.9589	4.9372	4.9154	4.8871	4.8682	4.8558	
	.99	13.7450	10.9248	9.7795	9.1483	8.7459	8.4661	8.2600	8.1017	7.9761	7.8741	7.7183	7.5590	7.3958	7.2960	7.2285	7.1432	7.0915	7.0567	7.0218	6.9867	6.9412	6.9107	6.8908	
	.999	35.507	27.000	23.703	21.924	20.803	20.030	19.463	19.030	18.688	18.411	17.989	17.559	17.120	16.853	16.672	16.445	16.307	16.214	16.121	16.028	15.907	15.826	15.774	
	.9999	82.489	61.633	53.680	49.419	46.747	44.909	43.566	42.541	41.732	41.077	40.081	39.068	38.036	37.407	36.984	36.450	36.127	35.910	35.693	35.474	35.192	35.002	34.879	
7	.9	3.5894	3.2574	3.0741	2.9605	2.8833	2.8274	2.7849	2.7516	2.7247	2.7025	2.6681	2.6322	2.5947	2.5714	2.5555	2.5351	2.5226	2.5142	2.5057	2.4971	2.4859	2.4784	2.4735	7
	.95	5.5914	4.7374	4.3468	4.1203	3.9715	3.8660	3.7870	3.7257	3.6767	3.6365	3.5747	3.5107	3.4445	3.4036	3.3758	3.3404	3.3189	3.3043	3.2897	3.2749	3.2557	3.2428	3.2343	
	.975	8.0727	6.5415	5.8898	5.5226	5.2852	5.1186	4.9949	4.8993	4.8232	4.7611	4.6658	4.5678	4.4667	4.4045	4.3624	4.3089	4.2763	4.2544	4.2323	4.2101	4.1812	4.1619	4.1492	
	.99	12.2464	9.5466	8.4513	7.8466	7.4604	7.1914	6.9928	6.8400	6.7188	6.6201	6.4691	6.3143	6.1554	6.0580	5.9920	5.9084	5.8577	5.8236	5.7892	5.7547	5.7099	5.6798	5.6601	
	.999	29.245	21.689	18.772	17.198	16.206	15.521	15.019	14.634	14.330	14.083	13.707	13.324	12.932	12.692	12.530	12.326	12.202	12.119	12.035	11.951	11.842	11.769	11.722	
	.9999	62.167	45.132	38.676	35.222	33.056	31.567	30.477	29.644	28.987	28.455	27.644	26.819	25.977	25.464	25.118	24.680	24.416	24.238	24.059	23.880	23.648	23.492	23.391	
8	.9	3.4579	3.1131	2.9238	2.8064	2.7264	2.6683	2.6241	2.5893	2.5612	2.5380	2.5020	2.4642	2.4246	2.3999	2.3830	2.3614	2.3481	2.3391	2.3300	2.3208	2.3088	2.3007	2.2954	8
	.95	5.3177	4.4590	4.0662	3.8379	3.6875	3.5806	3.5005	3.4381	3.3881	3.3472	3.2839	3.2184	3.1503	3.1081	3.0794	3.0428	3.0204	3.0053	2.9901	2.9747	2.9547	2.9412	2.9324	
	.975	7.5709	6.0595	5.4160	5.0526	4.8173	4.6517	4.5286	4.4333	4.3572	4.2951	4.1997	4.1012	3.9995	3.9367	3.8940	3.8398	3.8067	3.7844	3.7620	3.7393	3.7099	3.6901	3.6772	
	.99	11.2586	8.6491	7.5910	7.0061	6.6318	6.3707	6.1776	6.0289	5.9106	5.8143	5.6667	5.5151	5.3591	5.2631	5.1981	5.1156	5.0654	5.0316	4.9976	4.9633	4.9188	4.8889	4.8694	
	.999	25.4148	18.4937	15.8295	14.3916	13.4847	12.8580	12.3980	12.0455	11.7665	11.5401	11.1945	10.8413	10.4797	10.2583	10.1087	9.9194	9.8044	9.7272	9.6495	9.5714	9.4701	9.4021	9.3577	
	.9999	50.694	36.000	30.456	27.493	25.635	24.357	23.421	22.706	22.141	21.683	20.985	20.274	19.547	19.103	18.803	18.425	18.195	18.041	17.886	17.730	17.528	17.393	17.304	
9	.9	3.3603	3.0065	2.8129	2.6927	2.6106	2.5509	2.5053	2.4694	2.4403	2.4163	2.3789	2.3396	2.2983	2.2725	2.2547	2.2320	2.2180	2.2085	2.1989	2.1892	2.1765	2.1679	2.1623	9
	.95	5.1174	4.2565	3.8625	3.6331	3.4817	3.3738	3.2927	3.2296	3.1789	3.1373	3.0729	3.0061	2.9365	2.8932	2.8637	2.8259	2.8028	2.7872	2.7715	2.7556	2.7348	2.7208	2.7116	
	.975	7.2093	5.7147	5.0781	4.7181	4.4844	4.3197	4.1970	4.1020	4.0260	3.9639	3.8682	3.7694	3.6669	3.6035	3.5604	3.5055	3.4719	3.4493	3.4265	3.4034	3.3734	3.3532	3.3400	
	.99	10.5614	8.0215	6.9919	6.4221	6.0569	5.8018	5.6129	5.4671	5.3511	5.2565	5.1114	4.9621	4.8080	4.7130	4.6486	4.5666	4.5167	4.4831	4.4492	4.4150	4.3706	4.3407	4.3211	
	.999	22.8571	16.3871	13.9018	12.5603	11.7137	11.1281	10.6979	10.3680	10.1066	9.8943	9.5700	9.2381	8.8976	8.6888	8.5476	8.3685	8.2597	8.1865	8.1129	8.0387	7.9425	7.8779	7.8357	
	.9999	43.477	30.342	25.404	22.766	21.112	19.974	19.140	18.503	17.999	17.590	16.967	16.331	15.680	15.282	15.013	14.672	14.466	14.327	14.187	14.047	13.865	13.743	13.663	
10	.9	3.2850	2.9245	2.7277	2.6053	2.5216	2.4606	2.4140	2.3772	2.3473	2.3226	2.2841	2.2435	2.2007	2.1739	2.1554	2.1317	2.1171	2.1072	2.0971	2.0869	2.0736	2.0646	2.0586	10
	.95	4.9646	4.1028	3.7083	3.4780	3.3258	3.2172	3.1355	3.0717	3.0204	2.9782	2.9130	2.8450	2.7740	2.7298	2.6996	2.6609	2.6371	2.6211	2.6048	2.5884	2.5670	2.5525	2.5430	
	.975	6.9367	5.4564	4.8256	4.4683	4.2361	4.0721	3.9498	3.8549	3.7790	3.7168	3.6209	3.5217	3.4185	3.3546	3.3110	3.2554	3.2214	3.1984	3.1752	3.1517	3.1212	3.1006	3.0871	
	.99	10.0443	7.5594	6.5523	5.9943	5.6363	5.3858	5.2001	5.0567	4.9424	4.8491	4.7059	4.5581	4.4054	4.3111	4.2469	4.1653	4.1155	4.0819	4.0479	4.0137	3.9692	3.9392	3.9196	
	.999	21.0396	14.9054	12.5527	11.2828	10.4807	9.9256	9.5175	9.2041	8.9558	8.7539	8.4452	8.1288	7.8037	7.6041	7.4688	7.2971	7.1927	7.1224	7.0516	6.9802	6.8876	6.8253	6.7845	
	.9999	38.577	26.548	22.038	19.630	18.120	17.081	16.319	15.736	15.275	14.901	14.330	13.747	13.150	12.784	12.536	12.222	12.032	11.904	11.775	11.645	11.477	11.363	11.290	
		1	2	3	4	5	6	7	8	9	10	12	15	20	25	30	40	50	60	75	100	175	350	1,000	

(continued overleaf)