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)

$Df \rightarrow \nu_1$ / ν_2	p^*	1	2	3	4	5	6	7	8	9	10	12	15	20	25	30	40	50	60	75	100	175	350	1,000	ν_2
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	10.128	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	10.007	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	16.258	13.274	12.060	11.391	10.967	10.672	10.456	10.289	10.158	10.051	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	124.94	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	13.745	10.925	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	12.246	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	11.258	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	25.414	18.493	15.829	14.391	13.484	12.858	12.398	12.045	11.766	11.540	11.194	10.841	10.479	10.258	10.108	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	10.561	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	22.857	16.387	13.901	12.560	11.713	11.128	10.697	10.368	10.106	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	10.044	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	21.039	14.905	12.552	11.282	10.480	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)

2017-02-20

University of Waterloo

STAT 221 – W.H. Cherry

#13.61

Figure 13.13. SIX PERCENTILES FOR THE F DISTRIBUTION $[F_{\nu_1,\nu_2}]$

[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 $\Pr(Y \le y) = p^*$ ($p^* = 0.9, ..., .9999$) (ν_1 is the numerator, ν_2 the denominator, degrees of freedom)

$Df \rightarrow \nu_1$ / ν_2	p^*	1	2	3	4	5	6	7	8	9	10	12	15	20	25	30	40	50	60	75	100	175	350	1,000	
11	.9	3.2252	2.8595	2.6602	2.5362	2.4512	2.3891	2.3416	2.3040	2.2735	2.2482	2.2087	2.1671	2.1230	2.0953	2.0762	2.0516	2.0364	2.0261	2.0157	2.0050	1.9911	1.9817	1.9755	11
	.95	4.8443	3.9823	3.5874	3.3567	3.2039	3.0946	3.0123	2.9480	2.8962	2.8536	2.7876	2.7186	2.6464	2.6014	2.5705	2.5309	2.5066	2.4901	2.4734	2.4566	2.4345	2.4196	2.4098	
	.975	6.7241	5.2559	4.6300	4.2751	4.0440	3.8807	3.7586	3.6638	3.5879	3.5257	3.4296	3.3299	3.2261	3.1616	3.1176	3.0613	3.0268	3.0035	2.9800	2.9561	2.9250	2.9040	2.8902	
	.99	9.6460	7.2057	6.2167	5.6683	5.3160	5.0692	4.8861	4.7445	4.6315	4.5393	4.3974	4.2509	4.0990	4.0051	3.9411	3.8596	3.8097	3.7761	3.7421	3.7077	3.6630	3.6329	3.6131	
	.999	19.6868	13.8116	11.5611	10.3461	9.5784	9.0466	8.6553	8.3548	8.1163	7.9224	7.6256	7.3210	7.0076	6.8147	6.6839	6.5178	6.4165	6.3483	6.2795	6.2102	6.1201	6.0595	6.0198	
	.9999	35.0605	23.8518	19.6585	17.4211	16.0178	15.0511	14.3425	13.7999	13.3706	13.0221	12.4901	11.9458	11.3877	11.0452	10.8134	10.5194	10.3406	10.2203	10.0991	9.9769	9.8185	9.7119	9.6422	
12	.9	3.1765	2.8068	2.6055	2.4801	2.3940	2.3310	2.2828	2.2446	2.2135	2.1878	2.1474	2.1049	2.0597	2.0312	2.0115	1.9861	1.9704	1.9597	1.9489	1.9379	1.9234	1.9136	1.9071	12
	.95	4.7472	3.8853	3.4903	3.2592	3.1059	2.9961	2.9134	2.8486	2.7964	2.7534	2.6866	2.6169	2.5436	2.4977	2.4663	2.4259	2.4010	2.3842	2.3671	2.3498	2.3271	2.3118	2.3017	
	.975	6.5538	5.0959	4.4742	4.1212	3.8911	3.7283	3.6065	3.5118	3.4358	3.3736	3.2773	3.1772	3.0728	3.0077	2.9633	2.9063	2.8714	2.8478	2.8238	2.7996	2.7680	2.7466	2.7325	
	.99	9.3302	6.9266	5.9525	5.4120	5.0643	4.8206	4.6395	4.4994	4.3875	4.2961	4.1553	4.0096	3.8584	3.7647	3.7008	3.6192	3.5692	3.5355	3.5014	3.4668	3.4219	3.3915	3.3716	
	.999	18.6433	12.9737	10.8042	9.6327	8.8921	8.3788	8.0009	7.7104	7.4797	7.2920	7.0046	6.7092	6.4048	6.2172	6.0898	5.9278	5.8290	5.7623	5.6951	5.6272	5.5390	5.4795	5.4406	
	.9999	32.4269	21.8495	17.8995	15.7926	14.4710	13.5602	12.8924	12.3807	11.9757	11.6467	11.1443	10.6298	10.1015	9.7769	9.5570	9.2778	9.1078	8.9933	8.8780	8.7616	8.6106	8.5089	8.4423	
13	.9	3.1362	2.7632	2.5603	2.4337	2.3467	2.2830	2.2341	2.1953	2.1638	2.1376	2.0966	2.0532	2.0070	1.9778	1.9576	1.9315	1.9153	1.9043	1.8931	1.8817	1.8667	1.8565	1.8498	13
	.95	4.6672	3.8056	3.4105	3.1791	3.0254	2.9153	2.8321	2.7669	2.7144	2.6710	2.6037	2.5331	2.4589	2.4123	2.3803	2.3392	2.3138	2.2966	2.2791	2.2614	2.2382	2.2224	2.2121	
	.975	6.4143	4.9653	4.3472	3.9959	3.7667	3.6043	3.4827	3.3880	3.3120	3.2497	3.1532	3.0527	2.9477	2.8821	2.8372	2.7797	2.7443	2.7204	2.6961	2.6715	2.6393	2.6175	2.6032	
	.99	9.0738	6.7010	5.7394	5.2053	4.8616	4.6204	4.4410	4.3021	4.1911	4.1003	3.9603	3.8154	3.6646	3.5710	3.5070	3.4253	3.3752	3.3413	3.3070	3.2723	3.2270	3.1964	3.1763	
	.999	17.8154	12.3127	10.2089	9.0727	8.3541	7.8557	7.4886	7.2061	6.9818	6.7992	6.5192	6.2312	5.9340	5.7505	5.6258	5.4670	5.3700	5.3046	5.2385	5.1718	5.0849	5.0263	4.9879	
	.9999	30.3878	20.3101	16.5523	14.5485	13.2913	12.4247	11.7889	11.3017	10.9158	10.6022	10.1231	9.6319	9.1270	8.8164	8.6058	8.3381	8.1750	8.0651	7.9542	7.8423	7.6969	7.5989	7.5348	
14	.9	3.1022	2.7265	2.5222	2.3947	2.3069	2.2426	2.1931	2.1539	2.1220	2.0954	2.0537	2.0095	1.9625	1.9326	1.9119	1.8852	1.8686	1.8572	1.8457	1.8340	1.8185	1.8080	1.8011	14
	.95	4.6001	3.7389	3.3439	3.1122	2.9582	2.8477	2.7642	2.6987	2.6458	2.6022	2.5342	2.4630	2.3879	2.3407	2.3082	2.2664	2.2405	2.2229	2.2051	2.1870	2.1632	2.1471	2.1365	
	.975	6.2979	4.8567	4.2417	3.8919	3.6634	3.5014	3.3799	3.2853	3.2093	3.1469	3.0502	2.9493	2.8437	2.7777	2.7324	2.6742	2.6384	2.6142	2.5895	2.5646	2.5319	2.5097	2.4951	
	.99	8.8616	6.5149	5.5639	5.0354	4.6950	4.4558	4.2779	4.1399	4.0297	3.9394	3.8001	3.6557	3.5052	3.4116	3.3476	3.2656	3.2153	3.1813	3.1468	3.1118	3.0662	3.0353	3.0150	
	.999	17.1434	11.7789	9.7294	8.6223	7.9218	7.4358	7.0775	6.8017	6.5826	6.4041	6.1302	5.8483	5.5568	5.3767	5.2542	5.0979	5.0023	4.9378	4.8726	4.8067	4.7208	4.6629	4.6248	
	.9999	28.7662	19.0932	15.4908	13.5703	12.3653	11.5343	10.9245	10.4569	10.0865	9.7853	9.3249	8.8526	8.3664	8.0670	7.8638	7.6053	7.4476	7.3412	7.2339	7.1255	6.9845	6.8895	6.8272	
15	.9	3.0732	2.6952	2.4898	2.3614	2.2730	2.2081	2.1582	2.1185	2.0862	2.0593	2.0171	1.9722	1.9243	1.8939	1.8728	1.8454	1.8284	1.8168	1.8049	1.7929	1.7770	1.7661	1.7589	15
	.95	4.5431	3.6823	3.2874	3.0556	2.9013	2.7905	2.7066	2.6408	2.5876	2.5437	2.4753	2.4034	2.3275	2.2797	2.2468	2.2043	2.1780	2.1601	2.1419	2.1234	2.0992	2.0826	2.0718	
	.975	6.1995	4.7650	4.1528	3.8043	3.5764	3.4147	3.2934	3.1987	3.1227	3.0602	2.9633	2.8621	2.7559	2.6894	2.6437	2.5850	2.5488	2.5242	2.4993	2.4739	2.4408	2.4182	2.4034	
F_{ν_1,ν_2}	.99	8.6831	6.3589	5.4170	4.8932	4.5556	4.3183	4.1415	4.0045	3.8948	3.8049	3.6662	3.5222	3.3719	3.2782	3.2141	3.1319	3.0814	3.0471	3.0124	2.9772	2.9312	2.9000	2.8795	F_{ν_1,ν_2}
	.999	16.5874	11.3391	9.3353	8.2527	7.5674	7.0917	6.7408	6.4707	6.2559	6.0808	5.8121	5.5351	5.2484	5.0710	4.9502	4.7959	4.7015	4.6377	4.5732	4.5079	4.4228	4.3652	4.3275	
	.9999	27.4480	18.1091	14.6350	12.7832	11.6211	10.8194	10.2310	9.7796	9.4218	9.1309	8.6859	8.2290	7.7582	7.4679	7.2707	7.0197	6.8663	6.7628	6.6583	6.5527	6.4153	6.3225	6.2617	
16	.9	3.0481	2.6682	2.4618	2.3327	2.2438	2.1783	2.1280	2.0880	2.0553	2.0281	1.9854	1.9399	1.8913	1.8603	1.8388	1.8108	1.7934	1.7816	1.7694	1.7570	1.7407	1.7296	1.7222	16
	.95	4.4940	3.6337	3.2389	3.0069	2.8524	2.7413	2.6572	2.5911	2.5377	2.4935	2.4247	2.3522	2.2756	2.2272	2.1938	2.1507	2.1240	2.1058	2.0873	2.0685	2.0437	2.0268	2.0157	
	.975	6.1151	4.6867	4.0768	3.7294	3.5021	3.3406	3.2194	3.1248	3.0488	2.9862	2.8890	2.7875	2.6808	2.6138	2.5678	2.5085	2.4719	2.4471	2.4218	2.3961	2.3624	2.3395	2.3245	
	.99	8.5310	6.2262	5.2922	4.7726	4.4374	4.2016	4.0259	3.8896	3.7804	3.6909	3.5527	3.4089	3.2587	3.1650	3.1007	3.0182	2.9675	2.9330	2.8981	2.8627	2.8163	2.7848	2.7641	
	.999	16.1202	10.9710	9.0059	7.9442	7.2719	6.8049	6.4604	6.1950	5.9839	5.8117	5.5473	5.2745	4.9918	4.8167	4.6972	4.5446	4.4511	4.3878	4.3238	4.2590	4.1744	4.1172	4.0796	
	.9999	26.3569	17.2982	13.9315	12.1372	11.0111	10.2340	9.6634	9.2256	8.8784	8.5961	8.1639	7.7198	7.2618	6.9791	6.7869	6.5419	6.3922	6.2911	6.1889	6.0855	5.9509	5.8599	5.8003	
17	.9	3.0262	2.6446	2.4374	2.3077	2.2183	2.1524	2.1017	2.0613	2.0284	2.0009	1.9577	1.9117	1.8624	1.8309	1.8090	1.7805	1.7628	1.7506	1.7382	1.7255	1.7088	1.6973	1.6898	17
	.95	4.4513	3.5915	3.1968	2.9647	2.8100	2.6987	2.6143	2.5480	2.4943	2.4499	2.3807	2.3077	2.2304	2.1815	2.1477	2.1040	2.0769	2.0584	2.0396	2.0204	1.9952	1.9779	1.9666	
	.975	6.0420	4.6189	4.0112	3.6648	3.4379	3.2767	3.1556	3.0610	2.9849	2.9222	2.8249	2.7230	2.6158	2.5484	2.5020	2.4422	2.4053	2.3801	2.3545	2.3285	2.2943	2.2711	2.2558	
	.99	8.3997	6.1121	5.1850	4.6690	4.3359	4.1015	3.9267	3.7910	3.6822	3.5931	3.4552	3.3117	3.1615	3.0676	3.0032	2.9205	2.8694	2.8348	2.7996	2.7639	2.7171	2.6853	2.6644	
	.999	15.7222	10.6584	8.7269	7.6831	7.0219	6.5625	6.2234	5.9620	5.7541	5.5844	5.3237	5.0544	4.7751	4.6019	4.4836	4.3323	4.2395	4.1767	4.1131	4.0486	3.9644	3.9074	3.8699	
	.9999	25.4396	16.6193	13.3439	11.5984	10.5028	9.7466	9.1911	8.7648	8.4267	8.1515	7.7302	7.2970	6.8498	6.5735	6.3854	6.1455	5.9987	5.8996	5.7993	5.6978	5.5655	5.4760	5.4172	
18	.9	3.0070	2.6239	2.4160	2.2858	2.1958	2.1296	2.0785	2.0379	2.0047	1.9770	1.9333	1.8868	1.8368	1.8049	1.7827	1.7537	1.7356	1.7232	1.7106	1.6976	1.6805	1.6687	1.6609	18
	.95	4.4139	3.5546	3.1599	2.9277	2.7729	2.6613	2.5767	2.5102	2.4563	2.4117	2.3421	2.2686	2.1906	2.1413	2.1071	2.0629	2.0354	2.0166	1.9975	1.9780	1.9523	1.9348	1.9232	
	.975	5.9781	4.5597	3.9539	3.6083	3.3820	3.2209	3.0999	3.0053	2.9291	2.8664	2.7689	2.6667	2.5590	2.4912	2.4445	2.3842	2.3468	2.3214	2.2956	2.2692	2.2346	2.2110	2.1954	
	.99	8.2854	6.0129	5.0919	4.5790	4.2479	4.0146	3.8406	3.7054	3.5971	3.5082	3.3706	3.2273	3.0771	2.9831	2.9185	2.8354	2.7841	2.7493	2.7139	2.6779	2.6307	2.5986	2.5775	
	.999	15.3793	10.3899	8.4875	7.4593	6.8078	6.3550	6.0206	5.7628	5.5575	5.3900	5.1324	4.8663	4.5899	4.4182	4.3009	4.1507	4.0584	3.9960	3.9327	3.8685	3.7845	3.7276	3.6901	
	.9999	24.6582	16.0430	12.8461	11.1426	10.0732	9.3349	8.7925	8.3760	8.0456	7.7767	7.3647	6.9408	6.5028	6.2318	6.0473	5.8117	5.6674	5.5699	5.4712	5.3712	5.2408	5.1525	5.0945	
19	.9	2.9899	2.6056	2.3970	2.2663	2.1760	2.1094	2.0580	2.0171	1.9836	1.9557	1.9117	1.8647	1.8142	1.7818	1.7592	1.7298	1.7114	1.6988	1.6858	1.6726	1.6551	1.6431	1.6351	19
	.95	4.3807	3.5219	3.1274	2.8951	2.7401	2.6283	2.5435	2.4768	2.4227	2.3779	2.3080	2.2341	2.1555	2.1057	2.0712	2.0264	1.9986	1.9795	1.9601	1.9403	1.9142	1.8963	1.8845	
	.975	5.9216	4.5075	3.9034	3.5587	3.3327	3.1718	3.0509	2.9563	2.8801	2.8172	2.7196	2.6171	2.5089	2.4408	2.3937	2.3329	2.2952	2.2696	2.2434	2.2167	2.1816	2.1577	2.1419	
	.99	8.1849	5.9259	5.0103	4.5003	4.1708	3.9386	3.7653	3.6305	3.5225	3.4338	3.2965	3.1533	3.0031	2.9089	2.8442	2.7608	2.7093	2.6742	2.6386	2.6023	2.5547	2.5223	2.5009	
	.999	15.0808	10.1568	8.2799	7.2655	6.6225	6.1754	5.8452	5.5904	5.3876	5.2219	4.9672	4.7037	4.4297	4.2594	4.1429	3.9936	3.9018	3.8396	3.7765	3.7125	3.6287	3.5718	3.5344	
	.9999	23.9851	15.5482	12.4194	10.7524	9.7057	8.9830	8.4519	8.0440	7.7202	7.4567	7.0528	6.6369	6.2068	5.9405	5.7590	5.5271	5.3849	5.2887	5.1913	5.0927	4.9637	4.8764	4.8190	
20	.9	2.9747	2.5893	2.3801	2.2489	2.1582	2.0913	2.0397	1.9985	1.9649	1.9367	1.8924	1.8449	1.7938	1.7611	1.7382	1.7083	1.6896	1.6768	1.6636	1.6501	1.6323	1.6200	1.6118	20
	.95	4.3512	3.4928	3.0984	2.8661	2.7109	2.5990	2.5140	2.4471	2.3928	2.3479	2.2776	2.2033	2.1242	2.0739	2.0391	1.9938	1.9656	1.9464	1.9267	1.9066	1.8800	1.8618	1.8497	
	.975	5.8715	4.4613	3.8587	3.5147	3.2891	3.1283	3.0074	2.9128	2.8365	2.7737	2.6758	2.5731	2.4645	2.3959	2.3486	2.2873	2.2493	2.2234	2.1969	2.1699	2.1344	2.1101	2.0941	
	.99	8.0960	5.8489	4.9382	4.4307	4.1027	3.8714	3.6987	3.5644	3.4567	3.3682	3.2311	3.0880	2.9377	2.8434	2.7785	2.6947	2.6430	2.6077	2.5718	2.5353	2.4873	2.4546	2.4329	
	.999	14.8188	9.9526	8.0984	7.0960	6.4606	6.0186	5.6920	5.4400	5.2392	5.0752	4.8229	4.5618	4.2900	4.1208	4.0050	3.8564	3.7650	3.7030	3.6401	3.5762	3.4925	3.4356	3.3981	
	.9999	23.3995	15.1189	12.0498	10.4147	9.3880	8.6789	8.1577	7.7573	7.4394	7.1805	6.7837	6.3748	5.9516	5.6894	5.5105	5.2817	5.1413	5.0463	4.9500	4.8524	4.7248	4.6382	4.5813	
		1	2	3	4	5	6	7	8	9	10	12	15	20	25	30	40	50	60	75	100	175	350	1,000	

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)

$Df \rightarrow \nu_1$ / 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 | ν_2

ν_2	p^*	1	2	3	4	5	6	7	8	9	10	12	15	20	25	30	40	50	60	75	100	175	350	1,000	ν_2
21	.9	2.9610	2.5746	2.3649	2.2333	2.1423	2.0751	2.0233	1.9819	1.9480	1.9197	1.8750	1.8271	1.7756	1.7424	1.7193	1.6890	1.6700	1.6569	1.6435	1.6298	1.6116	1.5990	1.5907	21
	.95	4.3248	3.4668	3.0725	2.8401	2.6848	2.5727	2.4876	2.4205	2.3660	2.3210	2.2504	2.1757	2.0960	2.0454	2.0102	1.9645	1.9360	1.9165	1.8965	1.8761	1.8491	1.8306	1.8184	
	.975	5.8266	4.4199	3.8188	3.4754	3.2501	3.0895	2.9686	2.8740	2.7977	2.7348	2.6368	2.5338	2.4247	2.3558	2.3082	2.2465	2.2081	2.1819	2.1552	2.1280	2.0920	2.0674	2.0511	
	.99	8.0166	5.7804	4.8740	4.3688	4.0421	3.8117	3.6396	3.5056	3.3981	3.3098	3.1730	3.0300	2.8796	2.7850	2.7200	2.6359	2.5838	2.5484	2.5123	2.4755	2.4271	2.3940	2.3722	
	.999	14.5869	9.7723	7.9383	6.9467	6.3179	5.8805	5.5571	5.3076	5.1087	4.9462	4.6960	4.4369	4.1670	3.9988	3.8836	3.7357	3.6445	3.5827	3.5199	3.4560	3.3723	3.3154	3.2779	
	.9999	22.8855	14.7430	11.7267	10.1199	9.1107	8.4137	7.9012	7.5074	7.1947	6.9400	6.5493	6.1467	5.7295	5.4708	5.2942	5.0681	4.9292	4.8352	4.7399	4.6432	4.5166	4.4307	4.3742	
22	.9	2.9486	2.5613	2.3512	2.2193	2.1279	2.0605	2.0084	1.9668	1.9327	1.9043	1.8593	1.8111	1.7590	1.7255	1.7021	1.6714	1.6521	1.6389	1.6253	1.6113	1.5927	1.5799	1.5714	22
	.95	4.3009	3.4434	3.0491	2.8167	2.6613	2.5491	2.4638	2.3965	2.3419	2.2967	2.2258	2.1508	2.0707	2.0196	1.9842	1.9380	1.9092	1.8894	1.8692	1.8486	1.8212	1.8024	1.7899	
	.975	5.7863	4.3828	3.7829	3.4401	3.2151	3.0546	2.9338	2.8392	2.7628	2.6998	2.6017	2.4984	2.3890	2.3198	2.2718	2.2097	2.1710	2.1446	2.1176	2.0901	2.0536	2.0287	2.0122	
	.99	7.9454	5.7190	4.8166	4.3134	3.9880	3.7583	3.5867	3.4530	3.3458	3.2576	3.1209	2.9779	2.8274	2.7328	2.6675	2.5831	2.5308	2.4951	2.4588	2.4217	2.3729	2.3395	2.3175	
	.999	14.3803	9.6120	7.7960	6.8142	6.1914	5.7580	5.4376	5.1901	4.9929	4.8317	4.5835	4.3262	4.0579	3.8906	3.7759	3.6285	3.5376	3.4759	3.4131	3.3493	3.2656	3.2086	3.1710	
	.9999	22.4309	14.4114	11.4421	9.8603	8.8668	8.1804	7.6757	7.2878	6.9797	6.7286	6.3435	5.9463	5.5345	5.2788	5.1042	4.8805	4.7430	4.6498	4.5553	4.4594	4.3337	4.2483	4.1921	
23	.9	2.9374	2.5493	2.3387	2.2065	2.1149	2.0472	1.9949	1.9531	1.9189	1.8903	1.8450	1.7964	1.7439	1.7101	1.6864	1.6554	1.6358	1.6224	1.6086	1.5944	1.5755	1.5624	1.5538	23
	.95	4.2793	3.4221	3.0280	2.7955	2.6400	2.5277	2.4422	2.3748	2.3201	2.2747	2.2036	2.1282	2.0476	1.9963	1.9605	1.9139	1.8848	1.8648	1.8444	1.8234	1.7957	1.7766	1.7639	
	.975	5.7498	4.3492	3.7505	3.4083	3.1835	3.0232	2.9023	2.8077	2.7313	2.6682	2.5699	2.4665	2.3567	2.2871	2.2389	2.1763	2.1374	2.1107	2.0835	2.0557	2.0188	1.9936	1.9769	
	.99	7.8811	5.6637	4.7649	4.2636	3.9392	3.7102	3.5390	3.4057	3.2986	3.2106	3.0740	2.9311	2.7805	2.6856	2.6202	2.5355	2.4829	2.4471	2.4105	2.3732	2.3239	2.2903	2.2680	
	.999	14.1950	9.4685	7.6688	6.6957	6.0783	5.6486	5.3308	5.0853	4.8896	4.7296	4.4831	4.2274	3.9606	3.7940	3.6798	3.5328	3.4421	3.3804	3.3177	3.2539	3.1701	3.1130	3.0753	
	.9999	22.0260	14.1167	11.1894	9.6301	8.6506	7.9738	7.4760	7.0933	6.7893	6.5416	6.1614	5.7691	5.3620	5.1091	4.9362	4.7146	4.5783	4.4858	4.3920	4.2967	4.1717	4.0868	4.0308	
24	.9	2.9271	2.5383	2.3274	2.1949	2.1030	2.0351	1.9826	1.9407	1.9063	1.8775	1.8319	1.7831	1.7302	1.6960	1.6721	1.6407	1.6209	1.6073	1.5933	1.5788	1.5596	1.5464	1.5375	24
	.95	4.2597	3.4028	3.0088	2.7763	2.6207	2.5082	2.4226	2.3551	2.3002	2.2547	2.1834	2.1077	2.0267	1.9750	1.9390	1.8920	1.8625	1.8424	1.8217	1.8005	1.7723	1.7529	1.7401	
	.975	5.7166	4.3187	3.7211	3.3794	3.1548	2.9946	2.8738	2.7791	2.7027	2.6396	2.5411	2.4374	2.3273	2.2574	2.2090	2.1460	2.1067	2.0799	2.0524	2.0243	1.9870	1.9615	1.9445	
	.99	7.8229	5.6136	4.7181	4.2184	3.8951	3.6667	3.4959	3.3629	3.2560	3.1681	3.0316	2.8887	2.7380	2.6430	2.5773	2.4923	2.4395	2.4035	2.3667	2.3291	2.2794	2.2455	2.2230	
	.999	14.0280	9.3394	7.5545	6.5892	5.9768	5.5504	5.2349	4.9912	4.7968	4.6379	4.3929	4.1387	3.8732	3.7073	3.5935	3.4468	3.3562	3.2946	3.2320	3.1681	3.0842	3.0269	2.9891	
	.9999	21.6633	13.8532	10.9637	9.4246	8.4578	7.7896	7.2980	6.9201	6.6197	6.3750	5.9992	5.6112	5.2084	4.9580	4.7867	4.5669	4.4316	4.3397	4.2465	4.1517	4.0274	3.9428	3.8870	
25	.9	2.9177	2.5283	2.3170	2.1842	2.0922	2.0241	1.9714	1.9292	1.8947	1.8658	1.8200	1.7708	1.7175	1.6831	1.6589	1.6272	1.6072	1.5934	1.5792	1.5645	1.5450	1.5315	1.5225	25
	.95	4.2417	3.3852	2.9912	2.7587	2.6030	2.4904	2.4047	2.3371	2.2821	2.2365	2.1649	2.0889	2.0075	1.9554	1.9192	1.8718	1.8421	1.8217	1.8008	1.7794	1.7508	1.7312	1.7181	
	.975	5.6864	4.2909	3.6943	3.3530	3.1287	2.9685	2.8478	2.7531	2.6766	2.6135	2.5149	2.4110	2.3005	2.2303	2.1816	2.1183	2.0787	2.0516	2.0239	1.9955	1.9579	1.9321	1.9149	
	.99	7.7698	5.5680	4.6755	4.1774	3.8550	3.6272	3.4568	3.3239	3.2172	3.1294	2.9931	2.8502	2.6993	2.6041	2.5383	2.4530	2.3999	2.3637	2.3267	2.2888	2.2388	2.2045	2.1818	
	.999	13.8767	9.2225	7.4511	6.4931	5.8851	5.4617	5.1484	4.9063	4.7131	4.5551	4.3116	4.0587	3.7944	3.6291	3.5155	3.3692	3.2787	3.2171	3.1544	3.0905	3.0064	2.9490	2.9111	
	.9999	21.3364	13.6162	10.7609	9.2401	8.2847	7.6243	7.1384	6.7647	6.4677	6.2256	5.8538	5.4698	5.0708	4.8225	4.6526	4.4345	4.3001	4.2088	4.1161	4.0218	3.8979	3.8136	3.7579	
26	.9	2.9091	2.5191	2.3075	2.1745	2.0822	2.0139	1.9610	1.9188	1.8841	1.8550	1.8090	1.7596	1.7059	1.6712	1.6468	1.6147	1.5945	1.5805	1.5661	1.5513	1.5315	1.5178	1.5086	26
	.95	4.2252	3.3690	2.9752	2.7426	2.5868	2.4741	2.3883	2.3205	2.2655	2.2197	2.1479	2.0716	1.9898	1.9375	1.9010	1.8533	1.8233	1.8027	1.7816	1.7599	1.7310	1.7111	1.6978	
	.975	5.6586	4.2655	3.6697	3.3289	3.1048	2.9447	2.8240	2.7293	2.6528	2.5896	2.4908	2.3867	2.2759	2.2054	2.1565	2.0928	2.0530	2.0257	1.9978	1.9691	1.9311	1.9049	1.8876	
	.99	7.7213	5.5263	4.6366	4.1400	3.8183	3.5911	3.4210	3.2884	3.1818	3.0941	2.9578	2.8150	2.6640	2.5686	2.5026	2.4170	2.3637	2.3273	2.2900	2.2519	2.2015	2.1669	2.1440	
	.999	13.7390	9.1163	7.3572	6.4057	5.8018	5.3812	5.0698	4.8292	4.6372	4.4801	4.2378	3.9861	3.7228	3.5580	3.4448	3.2987	3.2083	3.1467	3.0840	3.0200	2.9357	2.8782	2.8401	
	.9999	21.0404	13.4019	10.5778	9.0736	8.1286	7.4752	6.9945	6.6247	6.3307	6.0910	5.7228	5.3424	4.9468	4.7006	4.5319	4.3152	4.1816	4.0908	3.9985	3.9046	3.7812	3.6970	3.6414	
27	.9	2.9012	2.5106	2.2987	2.1655	2.0730	2.0045	1.9515	1.9091	1.8743	1.8451	1.7989	1.7492	1.6951	1.6602	1.6356	1.6032	1.5827	1.5686	1.5540	1.5390	1.5189	1.5050	1.4957	27
	.95	4.2100	3.3541	2.9604	2.7278	2.5719	2.4591	2.3732	2.3053	2.2501	2.2043	2.1323	2.0558	1.9736	1.9210	1.8842	1.8361	1.8059	1.7851	1.7638	1.7419	1.7127	1.6925	1.6790	
	.975	5.6331	4.2421	3.6472	3.3067	3.0828	2.9228	2.8021	2.7074	2.6309	2.5676	2.4688	2.3644	2.2533	2.1826	2.1334	2.0693	2.0293	2.0018	1.9736	1.9447	1.9063	1.8799	1.8623	
	.99	7.6767	5.4881	4.6009	4.1056	3.7848	3.5580	3.3882	3.2558	3.1494	3.0618	2.9256	2.7827	2.6316	2.5360	2.4699	2.3840	2.3304	2.2938	2.2564	2.2180	2.1672	2.1323	2.1092	
	.999	13.6131	9.0194	7.2715	6.3261	5.7259	5.3078	4.9983	4.7590	4.5680	4.4117	4.1706	3.9200	3.6576	3.4933	3.3803	3.2344	3.1440	3.0825	3.0197	2.9557	2.8712	2.8134	2.7752	
	.9999	20.7712	13.2073	10.4116	8.9226	7.9870	7.3402	6.8641	6.4978	6.2066	5.9691	5.6042	5.2270	4.8346	4.5901	4.4226	4.2072	4.0743	3.9839	3.8920	3.7984	3.6753	3.5913	3.5358	
28	.9	2.8938	2.5028	2.2906	2.1571	2.0645	1.9959	1.9427	1.9001	1.8652	1.8359	1.7895	1.7395	1.6852	1.6500	1.6252	1.5925	1.5718	1.5575	1.5428	1.5276	1.5072	1.4931	1.4836	28
	.95	4.1960	3.3404	2.9467	2.7141	2.5581	2.4453	2.3593	2.2913	2.2360	2.1900	2.1179	2.0411	1.9586	1.9057	1.8687	1.8203	1.7898	1.7689	1.7473	1.7251	1.6956	1.6752	1.6615	
	.975	5.6096	4.2205	3.6264	3.2863	3.0626	2.9027	2.7820	2.6872	2.6106	2.5473	2.4484	2.3438	2.2324	2.1615	2.1121	2.0477	2.0073	1.9797	1.9513	1.9221	1.8834	1.8566	1.8389	
	.99	7.6356	5.4529	4.5681	4.0740	3.7539	3.5276	3.3581	3.2259	3.1195	3.0320	2.8959	2.7530	2.6017	2.5060	2.4397	2.3535	2.2997	2.2629	2.2253	2.1867	2.1355	2.1003	2.0769	
	.999	13.4976	8.9305	7.1931	6.2532	5.6565	5.2407	4.9328	4.6947	4.5047	4.3491	4.1091	3.8595	3.5980	3.4341	3.3213	3.1755	3.0852	3.0236	2.9608	2.8967	2.8120	2.7540	2.7156	
	.9999	20.5252	13.0298	10.2601	8.7850	7.8581	7.2172	6.7454	6.3824	6.0937	5.8582	5.4964	5.1221	4.7326	4.4897	4.3232	4.1090	3.9767	3.8867	3.7951	3.7018	3.5789	3.4951	3.4396	
29	.9	2.8870	2.4955	2.2831	2.1494	2.0566	1.9878	1.9345	1.8918	1.8568	1.8274	1.7808	1.7306	1.6759	1.6405	1.6155	1.5825	1.5617	1.5472	1.5323	1.5169	1.4963	1.4819	1.4723	29
	.95	4.1830	3.3277	2.9340	2.7014	2.5454	2.4324	2.3463	2.2783	2.2229	2.1768	2.1045	2.0275	1.9446	1.8915	1.8543	1.8055	1.7748	1.7537	1.7320	1.7096	1.6797	1.6590	1.6452	
	.975	5.5878	4.2006	3.6072	3.2674	3.0438	2.8840	2.7633	2.6686	2.5919	2.5286	2.4295	2.3248	2.2131	2.1419	2.0923	2.0276	1.9870	1.9591	1.9305	1.9011	1.8620	1.8350	1.8170	
	.99	7.5977	5.4204	4.5378	4.0449	3.7254	3.4995	3.3303	3.1982	3.0920	3.0045	2.8685	2.7256	2.5742	2.4783	2.4118	2.3253	2.2714	2.2344	2.1965	2.1577	2.1061	2.0707	2.0471	
	.999	13.3912	8.8488	7.1210	6.1863	5.5927	5.1791	4.8727	4.6358	4.4466	4.2917	4.0526	3.8039	3.5432	3.3797	3.2671	3.1215	3.0311	2.9695	2.9066	2.8424	2.7575	2.6993	2.6607	
	.9999	20.2996	12.8672	10.1215	8.6592	7.7403	7.1048	6.6369	6.2769	5.9906	5.7570	5.3979	5.0264	4.6394	4.3980	4.2324	4.0192	3.8875	3.7978	3.7065	3.6134	3.4908	3.4070	3.3515	
30	.9	2.8807	2.4887	2.2761	2.1422	2.0492	1.9803	1.9269	1.8841	1.8490	1.8195	1.7727	1.7223	1.6673	1.6316	1.6065	1.5732	1.5522	1.5376	1.5225	1.5069	1.4860	1.4715	1.4617	30
	.95	4.1709	3.3158	2.9223	2.6896	2.5336	2.4205	2.3343	2.2662	2.2107	2.1646	2.0921	2.0148	1.9317	1.8782	1.8409	1.7918	1.7609	1.7396	1.7176	1.6950	1.6648	1.6439	1.6299	
	.975	5.5675	4.1821	3.5894	3.2499	3.0265	2.8667	2.7460	2.6513	2.5746	2.5112	2.4120	2.3072	2.1952	2.1237	2.0739	2.0089	1.9681	1.9400	1.9112	1.8816	1.8421	1.8148	1.7967	
	.99	7.5625	5.3903	4.5097	4.0179	3.6990	3.4735	3.3045	3.1726	3.0665	2.9791	2.8431	2.7002	2.5487	2.4526	2.3860	2.2992	2.2450	2.2079	2.1698	2.1307	2.0788	2.0430	2.0192	
	.999	13.2930	8.7734	7.0545	6.1245	5.5339	5.1223	4.8173	4.5814	4.3930	4.2388	4.0006	3.7527	3.4928	3.3296	3.2171	3.0716	2.9813	2.9196	2.8567	2.7923	2.7072	2.6488	2.6100	
	.9999	20.0921	12.7177	9.9942	8.5437	7.6322	7.0017	6.5375	6.1802	5.8960	5.6641	5.3075	4.9385	4.5540	4.3140	4.1492	3.9370	3.8057	3.7163	3.6253	3.5324	3.4099	3.3261	3.2706	

(continued overleaf)

2017-02-20

University of Waterloo

STAT 221 – W.H. Cherry

#13.63

Figure 13.13. SIX PERCENTILES FOR THE F DISTRIBUTION $[F_{\nu_1,\nu_2}]$

[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 $\Pr(Y \le y) = p^*$ ($p^* = 0.9, ..., .9999$) (ν_1 is the numerator, ν_2 the denominator, degrees of freedom)

$Df \rightarrow \nu_1$ / ν_2	p^*	1	2	3	4	5	6	7	8	9	10	12	15	20	25	30	40	50	60	75	100	175	350	1,000	
35	.9	2.8547	2.4609	2.2474	2.1128	2.0191	1.9496	1.8957	1.8524	1.8168	1.7869	1.7394	1.6880	1.6317	1.5950	1.5691	1.5346	1.5127	1.4975	1.4817	1.4653	1.4431	1.4277	1.4172	35
	.95	4.1213	3.2674	2.8742	2.6415	2.4851	2.3718	2.2852	2.2167	2.1608	2.1143	2.0411	1.9629	1.8784	1.8239	1.7856	1.7351	1.7032	1.6811	1.6583	1.6347	1.6030	1.5809	1.5661	
	.975	5.4848	4.1065	3.5166	3.1785	2.9557	2.7961	2.6755	2.5807	2.5039	2.4403	2.3406	2.2350	2.1218	2.0493	1.9986	1.9321	1.8902	1.8613	1.8316	1.8009	1.7598	1.7312	1.7121	
	.99	7.4191	5.2679	4.3957	3.9082	3.5919	3.3679	3.2000	3.0687	2.9630	2.8758	2.7400	2.5970	2.4448	2.3480	2.2806	2.1926	2.1374	2.0994	2.0604	2.0202	1.9666	1.9294	1.9046	
	.999	12.8963	8.4697	6.7870	5.8764	5.2978	4.8942	4.5950	4.3634	4.1782	4.0265	3.7920	3.5474	3.2903	3.1283	3.0163	2.8711	2.7806	2.7187	2.6552	2.5902	2.5038	2.4443	2.4046	
	.9999	19.2615	12.1217	9.4873	8.0844	7.2025	6.5923	6.1427	5.7964	5.5209	5.2959	4.9495	4.5906	4.2156	3.9808	3.8193	3.6106	3.4812	3.3928	3.3025	3.2102	3.0880	3.0040	2.9482	
40	.9	2.8354	2.4404	2.2261	2.0909	1.9968	1.9269	1.8725	1.8289	1.7929	1.7627	1.7146	1.6624	1.6052	1.5677	1.5411	1.5056	1.4830	1.4672	1.4507	1.4336	1.4104	1.3941	1.3830	40
	.95	4.0847	3.2317	2.8387	2.6060	2.4495	2.3359	2.2490	2.1802	2.1240	2.0772	2.0035	1.9245	1.8389	1.7835	1.7444	1.6928	1.6600	1.6373	1.6137	1.5892	1.5562	1.5331	1.5175	
	.975	5.4239	4.0510	3.4633	3.1261	2.9037	2.7444	2.6238	2.5289	2.4519	2.3882	2.2882	2.1819	2.0677	1.9943	1.9429	1.8752	1.8324	1.8028	1.7722	1.7405	1.6979	1.6682	1.6481	
	.99	7.3141	5.1785	4.3126	3.8283	3.5138	3.2910	3.1238	2.9930	2.8876	2.8005	2.6648	2.5216	2.3689	2.2714	2.2034	2.1142	2.0581	2.0194	1.9795	1.9383	1.8831	1.8447	1.8189	
	.999	12.6094	8.2508	6.5945	5.6981	5.1283	4.7306	4.4355	4.2070	4.0243	3.8744	3.6425	3.4003	3.1450	2.9838	2.8721	2.7268	2.6360	2.5737	2.5097	2.4439	2.3562	2.2955	2.2549	
	.9999	18.6684	11.6979	9.1278	7.7592	6.8987	6.3031	5.8640	5.5257	5.2564	5.0363	4.6973	4.3455	3.9772	3.7461	3.5868	3.3804	3.2520	3.1642	3.0742	2.9820	2.8594	2.7749	2.7185	
45	.9	2.8205	2.4245	2.2097	2.0742	1.9796	1.9094	1.8547	1.8107	1.7745	1.7440	1.6954	1.6426	1.5846	1.5464	1.5193	1.4830	1.4597	1.4434	1.4264	1.4087	1.3845	1.3674	1.3558	45
	.95	4.0566	3.2043	2.8115	2.5787	2.4221	2.3083	2.2212	2.1521	2.0958	2.0487	1.9745	1.8949	1.8084	1.7522	1.7126	1.6599	1.6264	1.6031	1.5789	1.5536	1.5194	1.4953	1.4790	
	.975	5.3773	4.0085	3.4224	3.0860	2.8640	2.7048	2.5842	2.4892	2.4122	2.3483	2.2480	2.1412	2.0262	1.9521	1.9000	1.8313	1.7876	1.7574	1.7261	1.6935	1.6496	1.6187	1.5979	
	.99	7.2339	5.1103	4.2492	3.7674	3.4544	3.2325	3.0658	2.9353	2.8301	2.7432	2.6076	2.4642	2.3109	2.2129	2.1443	2.0542	1.9972	1.9579	1.9172	1.8751	1.8185	1.7788	1.7521	
	.999	12.3922	8.0855	6.4495	5.5639	5.0007	4.6075	4.3157	4.0895	3.9086	3.7601	3.5301	3.2897	3.0357	2.8750	2.7635	2.6180	2.5268	2.4640	2.3995	2.3330	2.2439	2.1820	2.1404	
	.9999	18.2240	11.3813	8.8598	7.5172	6.6728	6.0881	5.6571	5.3248	5.0601	4.8437	4.5102	4.1637	3.8004	3.5720	3.4142	3.2094	3.0817	2.9940	2.9042	2.8118	2.6886	2.6033	2.5462	
50	.9	2.8087	2.4120	2.1967	2.0608	1.9660	1.8954	1.8405	1.7963	1.7598	1.7291	1.6802	1.6269	1.5681	1.5294	1.5018	1.4648	1.4409	1.4242	1.4068	1.3885	1.3634	1.3456	1.3334	50
	.95	4.0343	3.1826	2.7900	2.5572	2.4004	2.2864	2.1992	2.1299	2.0734	2.0261	1.9515	1.8714	1.7841	1.7273	1.6872	1.6337	1.5995	1.5757	1.5508	1.5249	1.4896	1.4647	1.4477	
	.975	5.3403	3.9749	3.3902	3.0544	2.8327	2.6736	2.5530	2.4579	2.3808	2.3168	2.2162	2.1090	1.9933	1.9186	1.8659	1.7963	1.7520	1.7211	1.6892	1.6558	1.6107	1.5788	1.5572	
	.99	7.1706	5.0566	4.1993	3.7195	3.4077	3.1864	3.0202	2.8900	2.7850	2.6981	2.5625	2.4190	2.2652	2.1667	2.0976	2.0066	1.9490	1.9090	1.8677	1.8248	1.7667	1.7260	1.6984	
	.999	12.2221	7.9564	6.3364	5.4593	4.9013	4.5117	4.2224	3.9980	3.8185	3.6711	3.4426	3.2035	2.9506	2.7902	2.6787	2.5329	2.4413	2.3782	2.3131	2.2458	2.1555	2.0924	2.0499	
	.9999	17.8786	11.1360	8.6524	7.3301	6.4983	5.9222	5.4974	5.1698	4.9087	4.6952	4.3660	4.0237	3.6642	3.4378	3.2811	3.0774	2.9500	2.8625	2.7726	2.6799	2.5559	2.4697	2.4118	
60	.9	2.7911	2.3933	2.1774	2.0410	1.9457	1.8747	1.8194	1.7748	1.7380	1.7070	1.6574	1.6034	1.5435	1.5039	1.4755	1.4373	1.4126	1.3952	1.3769	1.3576	1.3311	1.3120	1.2988	60
	.95	4.0012	3.1504	2.7581	2.5252	2.3683	2.2541	2.1665	2.0970	2.0401	1.9926	1.9174	1.8364	1.7480	1.6902	1.6491	1.5943	1.5590	1.5343	1.5085	1.4814	1.4442	1.4176	1.3994	
	.975	5.2856	3.9253	3.3425	3.0077	2.7863	2.6274	2.5068	2.4117	2.3344	2.2702	2.1692	2.0613	1.9445	1.8687	1.8152	1.7440	1.6985	1.6668	1.6337	1.5990	1.5517	1.5180	1.4950	
F_{ν_1,ν_2}	.99	7.0771	4.9774	4.1259	3.6490	3.3389	3.1187	2.9530	2.8233	2.7185	2.6318	2.4961	2.3523	2.1978	2.0984	2.0285	1.9360	1.8772	1.8363	1.7937	1.7493	1.6889	1.6461	1.6169	F_{ν_1,ν_2}
	.999	11.9730	7.7678	6.1712	5.3067	4.7565	4.3721	4.0864	3.8648	3.6873	3.5415	3.3153	3.0781	2.8266	2.6665	2.5549	2.4086	2.3162	2.2523	2.1862	2.1175	2.0247	1.9593	1.9150	
	.9999	17.3769	10.7807	8.3526	7.0599	6.2465	5.6830	5.2672	4.9465	4.6907	4.4815	4.1585	3.8221	3.4681	3.2445	3.0894	2.8870	2.7599	2.6723	2.5820	2.4886	2.3628	2.2746	2.2150	
70	.9	2.7786	2.3800	2.1637	2.0269	1.9313	1.8600	1.8044	1.7596	1.7225	1.6913	1.6413	1.5866	1.5259	1.4857	1.4567	1.4176	1.3922	1.3742	1.3552	1.3352	1.3073	1.2871	1.2730	70
	.95	3.9778	3.1277	2.7355	2.5027	2.3456	2.2312	2.1435	2.0737	2.0166	1.9689	1.8932	1.8117	1.7223	1.6638	1.6220	1.5661	1.5300	1.5046	1.4779	1.4498	1.4110	1.3831	1.3638	
	.975	5.2470	3.8903	3.3090	2.9748	2.7537	2.5949	2.4743	2.3791	2.3017	2.2374	2.1361	2.0277	1.9100	1.8334	1.7792	1.7069	1.6604	1.6279	1.5939	1.5581	1.5089	1.4736	1.4493	
	.99	7.0114	4.9219	4.0744	3.5996	3.2907	3.0712	2.9060	2.7765	2.6719	2.5852	2.4496	2.3055	2.1504	2.0503	1.9797	1.8861	1.8263	1.7846	1.7410	1.6954	1.6329	1.5882	1.5576	
	.999	11.7993	7.6366	6.0566	5.2008	4.6561	4.2753	3.9922	3.7725	3.5964	3.4517	3.2271	2.9912	2.7405	2.5807	2.4689	2.3220	2.2289	2.1643	2.0972	2.0274	1.9323	1.8649	1.8188	
	.9999	17.0302	10.5359	8.1465	6.8743	6.0738	5.5190	5.1095	4.7935	4.5414	4.3351	4.0164	3.6841	3.3338	3.1121	2.9579	2.7563	2.6292	2.5414	2.4506	2.3563	2.2287	2.1385	2.0772	
80	.9	2.7693	2.3701	2.1535	2.0165	1.9206	1.8491	1.7933	1.7483	1.7110	1.6796	1.6292	1.5741	1.5128	1.4720	1.4426	1.4027	1.3767	1.3583	1.3388	1.3180	1.2890	1.2678	1.2530	80
	.95	3.9604	3.1108	2.7188	2.4859	2.3287	2.2142	2.1263	2.0564	1.9991	1.9512	1.8753	1.7932	1.7032	1.6440	1.6017	1.5449	1.5081	1.4821	1.4548	1.4259	1.3857	1.3565	1.3362	
	.975	5.2184	3.8643	3.2841	2.9504	2.7295	2.5708	2.4502	2.3549	2.2775	2.2130	2.1115	2.0026	1.8843	1.8071	1.7523	1.6790	1.6318	1.5987	1.5639	1.5271	1.4763	1.4396	1.4141	
	.99	6.9627	4.8807	4.0363	3.5631	3.2550	3.0361	2.8713	2.7420	2.6374	2.5508	2.4151	2.2709	2.1153	2.0146	1.9435	1.8489	1.7883	1.7459	1.7015	1.6548	1.5905	1.5442	1.5122	
	.999	11.6714	7.5401	5.9723	5.1231	4.5824	4.2043	3.9232	3.7049	3.5298	3.3859	3.1624	2.9274	2.6774	2.5176	2.4057	2.2582	2.1644	2.0992	2.0314	1.9604	1.8634	1.7940	1.7464	
	.9999	16.7764	10.3670	7.9960	6.7390	5.9479	5.3996	4.9947	4.6822	4.4328	4.2286	3.9131	3.5838	3.2361	3.0157	2.8622	2.6609	2.5338	2.4457	2.3544	2.2593	2.1298	2.0378	1.9748	
90	.9	2.7621	2.3625	2.1457	2.0084	1.9123	1.8406	1.7846	1.7395	1.7021	1.6705	1.6199	1.5644	1.5025	1.4613	1.4315	1.3911	1.3646	1.3457	1.3258	1.3044	1.2745	1.2524	1.2368	90
	.95	3.9469	3.0977	2.7058	2.4729	2.3157	2.2011	2.1131	2.0430	1.9856	1.9376	1.8613	1.7789	1.6883	1.6286	1.5859	1.5284	1.4910	1.4645	1.4366	1.4070	1.3656	1.3353	1.3140	
	.975	5.1962	3.8443	3.2649	2.9315	2.7109	2.5522	2.4316	2.3363	2.2588	2.1942	2.0925	1.9833	1.8644	1.7867	1.7315	1.6574	1.6095	1.5758	1.5404	1.5028	1.4506	1.4126	1.3860	
	.99	6.9251	4.8491	4.0070	3.5350	3.2276	3.0091	2.8445	2.7154	2.6109	2.5243	2.3886	2.2442	2.0882	1.9871	1.9155	1.8201	1.7588	1.7158	1.6707	1.6231	1.5572	1.5094	1.4762	
	.999	11.5732	7.4661	5.9078	5.0636	4.5260	4.1500	3.8703	3.6531	3.4789	3.3356	3.1129	2.8787	2.6291	2.4693	2.3572	2.2092	2.1149	2.0491	1.9806	1.9086	1.8098	1.7387	1.6895	
	.9999	16.5825	10.2206	7.8814	6.6360	5.8521	5.3087	4.9074	4.5976	4.3502	4.1477	3.8346	3.5076	3.1619	2.9424	2.7894	2.5884	2.4611	2.3727	2.2809	2.1849	2.0538	1.9600	1.8954	
100	.9	2.7564	2.3564	2.1394	2.0019	1.9057	1.8339	1.7778	1.7324	1.6949	1.6632	1.6124	1.5566	1.4943	1.4528	1.4227	1.3817	1.3548	1.3356	1.3153	1.2934	1.2626	1.2397	1.2235	100
	.95	3.9361	3.0873	2.6955	2.4626	2.3053	2.1906	2.1025	2.0323	1.9748	1.9267	1.8503	1.7675	1.6764	1.6163	1.5733	1.5151	1.4772	1.4504	1.4220	1.3917	1.3492	1.3179	1.2958	
	.975	5.1786	3.8284	3.2496	2.9166	2.6961	2.5374	2.4168	2.3215	2.2439	2.1793	2.0773	1.9679	1.8486	1.7705	1.7148	1.6401	1.5917	1.5575	1.5215	1.4833	1.4298	1.3906	1.3630	
	.99	6.8953	4.8239	3.9837	3.5127	3.2059	2.9877	2.8233	2.6943	2.5898	2.5033	2.3676	2.2230	2.0666	1.9652	1.8933	1.7972	1.7353	1.6918	1.6461	1.5977	1.5303	1.4812	1.4468	
	.999	11.4954	7.4077	5.8568	5.0167	4.4815	4.1071	3.8286	3.6123	3.4387	3.2959	3.0739	2.8402	2.5909	2.4311	2.3189	2.1704	2.0756	2.0094	1.9402	1.8674	1.7669	1.6942	1.6436	
	.9999	16.4295	10.1132	7.7912	6.5550	5.7768	5.2373	4.8388	4.5311	4.2854	4.0841	3.7729	3.4477	3.1037	2.8849	2.7322	2.5313	2.4038	2.3151	2.2228	2.1261	1.9934	1.8979	1.8318	
125	.9	2.7461	2.3455	2.1281	1.9904	1.8939	1.8218	1.7654	1.7199	1.6821	1.6502	1.5990	1.5427	1.4796	1.4374	1.4067	1.3648	1.3371	1.3173	1.2961	1.2732	1.2406	1.2160	1.1983	125
	.95	3.9169	3.0687	2.6771	2.4442	2.2868	2.1719	2.0836	2.0133	1.9556	1.9072	1.8304	1.7471	1.6551	1.5943	1.5505	1.4912	1.4524	1.4247	1.3953	1.3638	1.3191	1.2856	1.2616	
	.975	5.1471	3.7999	3.2224	2.8899	2.6696	2.5110	2.3904	2.2950	2.2173	2.1526	2.0503	1.9404	1.8202	1.7413	1.6850	1.6090	1.5595	1.5244	1.4873	1.4476	1.3915	1.3498	1.3200	
	.99	6.8421	4.7791	3.9422	3.4729	3.1671	2.9495	2.7855	2.6567	2.5524	2.4659	2.3301	2.1852	2.0282	1.9260	1.8534	1.7560	1.6930	1.6485	1.6015	1.5515	1.4812	1.4292	1.3922	
	.999	11.3573	7.3040	5.7664	4.9334	4.4026	4.0312	3.7548	3.5399	3.3675	3.2255	3.0047	2.7720	2.5232	2.3634	2.2509	2.1014	2.0056	1.9384	1.8680	1.7934	1.6895	1.6133	1.5595	
	.9999	16.1591	9.9236	7.6322	6.4122	5.6442	5.1116	4.7181	4.4141	4.1713	3.9723	3.6645	3.3424	3.0011	2.7836	2.6314	2.4305	2.3026	2.2132	2.1199	2.0216	1.8855	1.7862	1.7166	
		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)

2017-02-20

University of Waterloo

STAT 221 – W.H. Cherry

#13.64

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)

$Df \rightarrow \nu_1$ / ν_2	p^*	1	2	3	4	5	6	7	8	9	10	12	15	20	25	30	40	50	60	75	100	175	350	1,000	
150	.9	2.7393	2.3383	2.1207	1.9827	1.8861	1.8138	1.7572	1.7115	1.6736	1.6416	1.5901	1.5334	1.4698	1.4271	1.3960	1.3534	1.3251	1.3048	1.2831	1.2595	1.2255	1.1995	1.1805	150
	.95	3.9042	3.0564	2.6649	2.4320	2.2745	2.1595	2.0711	2.0006	1.9428	1.8943	1.8172	1.7335	1.6410	1.5796	1.5354	1.4752	1.4357	1.4074	1.3773	1.3448	1.2984	1.2631	1.2375	
	.975	5.1263	3.7811	3.2044	2.8722	2.6521	2.4936	2.3730	2.2775	2.1998	2.1349	2.0325	1.9222	1.8014	1.7220	1.6651	1.5882	1.5379	1.5022	1.4642	1.4234	1.3653	1.3215	1.2898	
	.99	6.8069	4.7495	3.9149	3.4467	3.1416	2.9244	2.7606	2.6319	2.5277	2.4412	2.3053	2.1603	2.0028	1.9001	1.8270	1.7286	1.6648	1.6195	1.5716	1.5204	1.4478	1.3934	1.3542	
	.999	11.2666	7.2359	5.7072	4.8788	4.3510	3.9815	3.7064	3.4926	3.3209	3.1795	2.9595	2.7274	2.4789	2.3189	2.2062	2.0560	1.9595	1.8915	1.8201	1.7441	1.6375	1.5583	1.5017	
	.9999	15.9822	9.7998	7.5284	6.3192	5.5578	5.0298	4.6395	4.3379	4.0970	3.8996	3.5939	3.2739	2.9344	2.7176	2.5657	2.3648	2.2364	2.1465	2.0524	1.9528	1.8138	1.7113	1.6385	
175	.9	2.7344	2.3331	2.1153	1.9773	1.8805	1.8081	1.7514	1.7056	1.6676	1.6354	1.5837	1.5268	1.4628	1.4197	1.3884	1.3452	1.3165	1.2959	1.2736	1.2494	1.2143	1.1872	1.1671	175
	.95	3.8951	3.0476	2.6562	2.4233	2.2658	2.1507	2.0622	1.9916	1.9337	1.8851	1.8078	1.7239	1.6309	1.5691	1.5245	1.4637	1.4237	1.3950	1.3643	1.3311	1.2832	1.2465	1.2195	
	.975	5.1115	3.7677	3.1916	2.8597	2.6397	2.4812	2.3606	2.2651	2.1873	2.1224	2.0198	1.9093	1.7880	1.7082	1.6509	1.5733	1.5225	1.4862	1.4476	1.4059	1.3462	1.3007	1.2673	
	.99	6.7819	4.7285	3.8955	3.4282	3.1235	2.9066	2.7429	2.6143	2.5101	2.4237	2.2878	2.1426	1.9848	1.8817	1.8081	1.7091	1.6446	1.5988	1.5502	1.4980	1.4235	1.3671	1.3259	
	.999	11.2023	7.1877	5.6653	4.8403	4.3145	3.9464	3.6723	3.4591	3.2880	3.1470	2.9275	2.6958	2.4476	2.2875	2.1746	2.0239	1.9267	1.8582	1.7859	1.7089	1.6000	1.5183	1.4593	
	.9999	15.8575	9.7126	7.4554	6.2537	5.4971	4.9722	4.5843	4.2844	4.0449	3.8485	3.5444	3.2258	2.8875	2.6712	2.5195	2.3185	2.1897	2.0994	2.0046	1.9039	1.7626	1.6574	1.5818	
200	.9	2.7308	2.3293	2.1114	1.9732	1.8763	1.8038	1.7470	1.7011	1.6630	1.6308	1.5789	1.5218	1.4575	1.4142	1.3826	1.3390	1.3100	1.2891	1.2665	1.2418	1.2058	1.1776	1.1566	200
	.95	3.8884	3.0411	2.6498	2.4168	2.2592	2.1441	2.0556	1.9849	1.9269	1.8783	1.8008	1.7166	1.6233	1.5612	1.5164	1.4551	1.4146	1.3856	1.3545	1.3206	1.2716	1.2336	1.2054	
	.975	5.1004	3.7578	3.1820	2.8503	2.6304	2.4720	2.3513	2.2558	2.1780	2.1130	2.0103	1.8996	1.7780	1.6978	1.6403	1.5621	1.5108	1.4742	1.4350	1.3927	1.3316	1.2846	1.2498	
	.99	6.7633	4.7129	3.8810	3.4143	3.1100	2.8933	2.7298	2.6012	2.4971	2.4106	2.2747	2.1294	1.9713	1.8679	1.7941	1.6945	1.6295	1.5833	1.5341	1.4811	1.4050	1.3469	1.3040	
	.999	11.1545	7.1519	5.6341	4.8116	4.2874	3.9203	3.6469	3.4343	3.2635	3.1228	2.9038	2.6724	2.4243	2.2642	2.1510	1.9999	1.9022	1.8333	1.7604	1.6824	1.5717	1.4879	1.4266	
	.9999	15.7648	9.6478	7.4012	6.2052	5.4521	4.9296	4.5433	4.2448	4.0062	3.8106	3.5077	3.1902	2.8527	2.6369	2.4853	2.2841	2.1551	2.0644	1.9690	1.8674	1.7241	1.6165	1.5384	
250	.9	2.7257	2.3239	2.1058	1.9675	1.8704	1.7978	1.7409	1.6949	1.6567	1.6244	1.5723	1.5149	1.4501	1.4064	1.3745	1.3304	1.3009	1.2795	1.2564	1.2310	1.1935	1.1638	1.1411	250
	.95	3.8789	3.0319	2.6407	2.4078	2.2501	2.1350	2.0463	1.9756	1.9174	1.8687	1.7910	1.7065	1.6127	1.5502	1.5049	1.4430	1.4019	1.3723	1.3405	1.3058	1.2550	1.2150	1.1847	
	.975	5.0849	3.7439	3.1687	2.8373	2.6175	2.4591	2.3384	2.2429	2.1650	2.0999	1.9971	1.8861	1.7640	1.6834	1.6254	1.5465	1.4945	1.4573	1.4174	1.3739	1.3108	1.2614	1.2241	
	.99	6.7373	4.6911	3.8609	3.3950	3.0912	2.8748	2.7114	2.5830	2.4789	2.3925	2.2565	2.1110	1.9525	1.8487	1.7744	1.6740	1.6083	1.5614	1.5113	1.4571	1.3787	1.3178	1.2720	
	.999	11.0880	7.1022	5.5909	4.7719	4.2497	3.8841	3.6117	3.3998	3.2296	3.0893	2.8708	2.6399	2.3920	2.2317	2.1183	1.9665	1.8681	1.7985	1.7247	1.6453	1.5316	1.4443	1.3793	
	.9999	15.6364	9.5582	7.3262	6.1380	5.3898	4.8706	4.4867	4.1900	3.9528	3.7583	3.4569	3.1409	2.8047	2.5893	2.4379	2.2365	2.1070	2.0157	1.9194	1.8165	1.6700	1.5585	1.4760	
300	.9	2.7223	2.3203	2.1021	1.9637	1.8666	1.7938	1.7369	1.6908	1.6525	1.6201	1.5679	1.5102	1.4452	1.4012	1.3691	1.3246	1.2947	1.2730	1.2495	1.2236	1.1851	1.1541	1.1301	300
	.95	3.8726	3.0258	2.6347	2.4017	2.2441	2.1289	2.0402	1.9693	1.9112	1.8623	1.7845	1.6998	1.6057	1.5428	1.4973	1.4349	1.3934	1.3634	1.3312	1.2958	1.2436	1.2021	1.1700	
	.975	5.0747	3.7346	3.1599	2.8286	2.6089	2.4505	2.3299	2.2343	2.1563	2.0913	1.9883	1.8771	1.7547	1.6738	1.6155	1.5360	1.4836	1.4459	1.4055	1.3613	1.2966	1.2453	1.2060	
	.99	6.7201	4.6766	3.8475	3.3823	3.0787	2.8625	2.6993	2.5709	2.4668	2.3804	2.2444	2.0988	1.9401	1.8359	1.7614	1.6604	1.5942	1.5468	1.4961	1.4410	1.3608	1.2977	1.2495	
	.999	11.0440	7.0693	5.5623	4.7456	4.2249	3.8601	3.5884	3.3771	3.2072	3.0672	2.8490	2.6184	2.3706	2.2102	2.0967	1.9444	1.8455	1.7754	1.7008	1.6205	1.5046	1.4145	1.3464	
	.9999	15.5515	9.4990	7.2768	6.0937	5.3487	4.8317	4.4495	4.1539	3.9176	3.7238	3.4235	3.1085	2.7730	2.5580	2.4066	2.2051	2.0752	1.9835	1.8866	1.7826	1.6338	1.5191	1.4330	
350	.9	2.7199	2.3178	2.0995	1.9610	1.8638	1.7910	1.7340	1.6878	1.6495	1.6170	1.5647	1.5069	1.4417	1.3975	1.3652	1.3204	1.2903	1.2684	1.2446	1.2183	1.1789	1.1470	1.1218	350
	.95	3.8682	3.0215	2.6304	2.3975	2.2398	2.1245	2.0358	1.9649	1.9067	1.8578	1.7799	1.6950	1.6006	1.5376	1.4919	1.4291	1.3873	1.3571	1.3244	1.2885	1.2353	1.1925	1.1590	
	.975	5.0674	3.7280	3.1536	2.8225	2.6028	2.4444	2.3238	2.2282	2.1502	2.0851	1.9820	1.8707	1.7481	1.6669	1.6084	1.5286	1.4758	1.4378	1.3969	1.3522	1.2862	1.2335	1.1924	
	.99	6.7078	4.6663	3.8380	3.3732	3.0699	2.8538	2.6906	2.5623	2.4582	2.3718	2.2358	2.0901	1.9312	1.8268	1.7521	1.6507	1.5840	1.5363	1.4852	1.4295	1.3478	1.2830	1.2327	
	.999	11.0127	7.0459	5.5420	4.7269	4.2072	3.8431	3.5719	3.3609	3.1913	3.0515	2.8336	2.6031	2.3554	2.1950	2.0813	1.9286	1.8294	1.7589	1.6838	1.6027	1.4851	1.3928	1.3221	
	.9999	15.4913	9.4570	7.2417	6.0623	5.3196	4.8042	4.4230	4.1283	3.8927	3.6994	3.3998	3.0855	2.7506	2.5358	2.3845	2.1828	2.0526	1.9607	1.8632	1.7584	1.6077	1.4906	1.4014	
400	.9	2.7181	2.3159	2.0975	1.9590	1.8617	1.7889	1.7318	1.6856	1.6472	1.6147	1.5623	1.5045	1.4391	1.3948	1.3623	1.3173	1.2870	1.2649	1.2409	1.2143	1.1743	1.1415	1.1153	400
	.95	3.8648	3.0183	2.6272	2.3942	2.2366	2.1212	2.0325	1.9616	1.9033	1.8544	1.7764	1.6914	1.5969	1.5337	1.4878	1.4247	1.3827	1.3522	1.3193	1.2831	1.2290	1.1852	1.1504	
	.975	5.0619	3.7231	3.1489	2.8179	2.5983	2.4399	2.3192	2.2236	2.1456	2.0805	1.9773	1.8659	1.7431	1.6618	1.6031	1.5230	1.4699	1.4317	1.3905	1.3453	1.2784	1.2244	1.1819	
	.99	6.6987	4.6586	3.8309	3.3664	3.0632	2.8472	2.6842	2.5559	2.4518	2.3654	2.2294	2.0836	1.9245	1.8200	1.7451	1.6434	1.5764	1.5285	1.4770	1.4207	1.3380	1.2717	1.2197	
	.999	10.9893	7.0284	5.5268	4.7129	4.1940	3.8305	3.5596	3.3488	3.1794	3.0397	2.8220	2.5917	2.3440	2.1836	2.0697	1.9168	1.8173	1.7465	1.6710	1.5893	1.4703	1.3763	1.3032	
	.9999	15.4464	9.4257	7.2156	6.0389	5.2979	4.7836	4.4033	4.1092	3.8741	3.6812	3.3822	3.0683	2.7339	2.5192	2.3679	2.1661	2.0358	1.9435	1.8457	1.7403	1.5881	1.4689	1.3770	
450	.9	2.7167	2.3144	2.0960	1.9574	1.8601	1.7872	1.7301	1.6839	1.6455	1.6129	1.5605	1.5025	1.4370	1.3926	1.3601	1.3148	1.2844	1.2622	1.2380	1.2111	1.1706	1.1371	1.1101	450
	.95	3.8622	3.0158	2.6247	2.3918	2.2340	2.1187	2.0299	1.9590	1.9007	1.8517	1.7737	1.6887	1.5939	1.5306	1.4846	1.4213	1.3791	1.3485	1.3153	1.2788	1.2241	1.1794	1.1435	
	.975	5.0577	3.7193	3.1452	2.8143	2.5947	2.4364	2.3157	2.2201	2.1420	2.0769	1.9737	1.8622	1.7393	1.6578	1.5990	1.5186	1.4653	1.4269	1.3854	1.3399	1.2722	1.2173	1.1734	
	.99	6.6915	4.6526	3.8254	3.3611	3.0581	2.8422	2.6791	2.5509	2.4469	2.3604	2.2244	2.0786	1.9194	1.8147	1.7397	1.6377	1.5705	1.5223	1.4705	1.4139	1.3302	1.2628	1.2093	
	.999	10.9712	7.0149	5.5151	4.7021	4.1838	3.8206	3.5500	3.3394	3.1702	3.0306	2.8131	2.5829	2.3352	2.1747	2.0608	1.9077	1.8079	1.7369	1.6611	1.5789	1.4588	1.3632	1.2882	
	.9999	15.4115	9.4015	7.1953	6.0208	5.2811	4.7677	4.3881	4.0945	3.8597	3.6671	3.3685	3.0551	2.7210	2.5064	2.3551	2.1533	2.0227	1.9303	1.8321	1.7262	1.5728	1.4518	1.3576	
500	.9	2.7156	2.3132	2.0948	1.9561	1.8588	1.7859	1.7288	1.6825	1.6441	1.6115	1.5590	1.5010	1.4354	1.3909	1.3582	1.3129	1.2823	1.2600	1.2356	1.2086	1.1676	1.1336	1.1058	500
	.95	3.8601	3.0138	2.6227	2.3898	2.2320	2.1167	2.0279	1.9569	1.8986	1.8496	1.7715	1.6864	1.5916	1.5282	1.4821	1.4186	1.3762	1.3455	1.3122	1.2753	1.2201	1.1746	1.1378	
	.975	5.0543	3.7162	3.1423	2.8114	2.5919	2.4335	2.3129	2.2172	2.1392	2.0740	1.9708	1.8592	1.7362	1.6546	1.5957	1.5151	1.4616	1.4231	1.3814	1.3356	1.2672	1.2114	1.1664	
	.99	6.6858	4.6478	3.8210	3.3569	3.0540	2.8381	2.6751	2.5469	2.4429	2.3565	2.2204	2.0746	1.9152	1.8105	1.7353	1.6332	1.5658	1.5174	1.4654	1.4084	1.3240	1.2555	1.2007	
	.999	10.9567	7.0041	5.5057	4.6935	4.1756	3.8128	3.5424	3.3320	3.1628	3.0234	2.8060	2.5759	2.3282	2.1677	2.0537	1.9004	1.8004	1.7292	1.6531	1.5705	1.4495	1.3526	1.2759	
	.9999	15.3837	9.3821	7.1792	6.0064	5.2677	4.7550	4.3759	4.0827	3.8482	3.6559	3.3576	3.0445	2.7107	2.4962	2.3449	2.1430	2.0123	1.9197	1.8212	1.7149	1.5605	1.4380	1.3418	
600	.9	2.7139	2.3114	2.0929	1.9543	1.8569	1.7840	1.7268	1.6805	1.6420	1.6094	1.5568	1.4987	1.4329	1.3883	1.3555	1.3099	1.2792	1.2567	1.2321	1.2047	1.1631	1.1281	1.0991	600
	.95	3.8570	3.0107	2.6198	2.3868	2.2290	2.1137	2.0248	1.9538	1.8955	1.8465	1.7683	1.6831	1.5881	1.5245	1.4782	1.4145	1.3719	1.3409	1.3073	1.2701	1.2140	1.1674	1.1289	
	.975	5.0492	3.7117	3.1379	2.8071	2.5876	2.4293	2.3086	2.2130	2.1349	2.0697	1.9664	1.8548	1.7316	1.6498	1.5907	1.5099	1.4561	1.4173	1.3753	1.3290	1.2597	1.2024	1.1555	
	.99	6.6773	4.6407	3.8144	3.3505	3.0478	2.8321	2.6691	2.5409	2.4369	2.3505	2.2144	2.0685	1.9091	1.8041	1.7288	1.6263	1.5587	1.5101	1.4577	1.4001	1.3145	1.2445	1.1873	
	.999	10.9350	6.9879	5.4916	4.6806	4.1634	3.8010	3.5310	3.3208	3.1518	3.0125	2.7953	2.5653	2.3177	2.1571	2.0430	1.8894	1.7892	1.7177	1.6412	1.5579	1.4354	1.3365	1.2568	
	.9999	15.3422	9.3532	7.1550	5.9848	5.2477	4.7361	4.3578	4.0651	3.8311	3.6391	3.3414	3.0287	2.6953	2.4809	2.3297	2.1276	1.9967	1.9038	1.8050	1.6980	1.5419	1.4171	1.3174	
		1	2	3	4	5	6	7	8	9	10	12	15	20	25	30	40	50	60	75	100	175	350	1,000	

F_{ν_1,ν_2}

(continued overleaf)

2017-02-20

University of Waterloo

STAT 221 – W.H. Cherry

#13.65

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 $\Pr(Y \le y) = p^*$ ($p^* = 0.9, ..., .9999$) (ν_1 is the numerator, ν_2 the denominator, degrees of freedom)

$Df \rightarrow \nu_1$ / ν_2 p^*

ν_2	p^*	1	2	3	4	5	6	7	8	9	10	12	15	20	25	30	40	50	60	75	100	175	350	1,000	ν_2
700	.9	2.7127	2.3102	2.0916	1.9529	1.8555	1.7825	1.7253	1.6790	1.6405	1.6079	1.5552	1.4970	1.4312	1.3864	1.3536	1.3078	1.2769	1.2543	1.2296	1.2020	1.1598	1.1241	1.0940	700
	.95	3.8548	3.0086	2.6176	2.3847	2.2269	2.1115	2.0226	1.9516	1.8932	1.8442	1.7660	1.6807	1.5856	1.5219	1.4755	1.4116	1.3688	1.3377	1.3039	1.2664	1.2096	1.1621	1.1223	
	.975	5.0456	3.7084	3.1348	2.8041	2.5846	2.4263	2.3056	2.2099	2.1319	2.0666	1.9633	1.8516	1.7282	1.6464	1.5872	1.5061	1.4522	1.4132	1.3710	1.3243	1.2542	1.1959	1.1474	
	.99	6.6712	4.6356	3.8097	3.3460	3.0434	2.8277	2.6649	2.5367	2.4327	2.3463	2.2102	2.0642	1.9047	1.7996	1.7242	1.6215	1.5536	1.5048	1.4521	1.3942	1.3077	1.2364	1.1774	
	.999	10.9196	6.9764	5.4816	4.6714	4.1547	3.7927	3.5229	3.3129	3.1440	3.0048	2.7877	2.5578	2.3102	2.1496	2.0354	1.8816	1.7812	1.7095	1.6327	1.5489	1.4253	1.3248	1.2427	
	.9999	15.3126	9.3326	7.1378	5.9694	5.2334	4.7226	4.3448	4.0526	3.8189	3.6272	3.3298	3.0175	2.6843	2.4701	2.3188	2.1166	1.9856	1.8925	1.7934	1.6859	1.5286	1.4019	1.2994	
800	.9	2.7118	2.3092	2.0906	1.9519	1.8545	1.7815	1.7243	1.6779	1.6394	1.6067	1.5540	1.4958	1.4298	1.3850	1.3521	1.3062	1.2752	1.2525	1.2277	1.1999	1.1573	1.1211	1.0901	800
	.95	3.8531	3.0070	2.6160	2.3831	2.2253	2.1099	2.0210	1.9500	1.8916	1.8425	1.7643	1.6789	1.5837	1.5199	1.4735	1.4094	1.3665	1.3353	1.3013	1.2635	1.2063	1.1580	1.1172	
	.975	5.0429	3.7059	3.1324	2.8018	2.5823	2.4240	2.3033	2.2077	2.1296	2.0643	1.9610	1.8492	1.7258	1.6438	1.5845	1.5033	1.4492	1.4101	1.3677	1.3208	1.2501	1.1909	1.1412	
	.99	6.6667	4.6318	3.8062	3.3427	3.0401	2.8245	2.6617	2.5335	2.4295	2.3431	2.2070	2.0610	1.9013	1.7962	1.7207	1.6178	1.5498	1.5008	1.4480	1.3897	1.3026	1.2302	1.1698	
	.999	10.9080	6.9677	5.4741	4.6645	4.1482	3.7864	3.5168	3.3069	3.1381	2.9990	2.7820	2.5522	2.3047	2.1440	2.0297	1.8758	1.7752	1.7033	1.6263	1.5422	1.4177	1.3159	1.2318	
	.9999	15.2904	9.3172	7.1250	5.9579	5.2228	4.7126	4.3352	4.0433	3.8098	3.6182	3.3211	3.0091	2.6761	2.4619	2.3107	2.1084	1.9772	1.8840	1.7847	1.6768	1.5186	1.3904	1.2856	
900	.9	2.7111	2.3085	2.0899	1.9511	1.8537	1.7807	1.7234	1.6770	1.6385	1.6058	1.5531	1.4948	1.4288	1.3839	1.3510	1.3050	1.2739	1.2512	1.2262	1.1982	1.1554	1.1187	1.0870	900
	.95	3.8518	3.0057	2.6148	2.3818	2.2240	2.1086	2.0197	1.9487	1.8903	1.8412	1.7629	1.6775	1.5822	1.5184	1.4719	1.4077	1.3647	1.3334	1.2993	1.2613	1.2037	1.1548	1.1131	
	.975	5.0407	3.7040	3.1306	2.8000	2.5806	2.4223	2.3016	2.2059	2.1278	2.0626	1.9592	1.8473	1.7238	1.6418	1.5825	1.5011	1.4469	1.4077	1.3651	1.3180	1.2468	1.1870	1.1362	
	.99	6.6631	4.6288	3.8034	3.3400	3.0376	2.8220	2.6592	2.5310	2.4270	2.3406	2.2045	2.0585	1.8988	1.7936	1.7180	1.6150	1.5468	1.4978	1.4447	1.3863	1.2985	1.2254	1.1636	
	.999	10.8990	6.9610	5.4683	4.6592	4.1432	3.7816	3.5121	3.3023	3.1336	2.9945	2.7776	2.5478	2.3003	2.1396	2.0253	1.8712	1.7705	1.6985	1.6213	1.5369	1.4118	1.3089	1.2232	
	.9999	15.2733	9.3052	7.1150	5.9490	5.2145	4.7047	4.3277	4.0360	3.8027	3.6113	3.3144	3.0026	2.6697	2.4556	2.3044	2.1021	1.9708	1.8775	1.7779	1.6698	1.5108	1.3814	1.2746	
1,000	.9	2.7106	2.3079	2.0893	1.9505	1.8530	1.7800	1.7228	1.6764	1.6378	1.6051	1.5524	1.4941	1.4280	1.3831	1.3501	1.3040	1.2729	1.2500	1.2250	1.1969	1.1538	1.1167	1.0845	1,000
	.95	3.8508	3.0047	2.6138	2.3808	2.2231	2.1076	2.0187	1.9476	1.8892	1.8402	1.7618	1.6764	1.5811	1.5171	1.4706	1.4063	1.3632	1.3318	1.2976	1.2596	1.2016	1.1522	1.1097	
	.975	5.0391	3.7025	3.1292	2.7986	2.5792	2.4208	2.3002	2.2045	2.1264	2.0611	1.9577	1.8459	1.7223	1.6402	1.5808	1.4993	1.4451	1.4058	1.3631	1.3158	1.2442	1.1838	1.1320	
	.99	6.6603	4.6264	3.8012	3.3380	3.0355	2.8200	2.6572	2.5290	2.4250	2.3386	2.2025	2.0565	1.8967	1.7915	1.7158	1.6127	1.5445	1.4953	1.4421	1.3835	1.2953	1.2215	1.1586	
	.999	10.8919	6.9557	5.4637	4.6549	4.1391	3.7777	3.5083	3.2986	3.1300	2.9909	2.7740	2.5443	2.2968	2.1361	2.0218	1.8676	1.7668	1.6947	1.6173	1.5327	1.4070	1.3033	1.2161	
	.9999	15.2595	9.2957	7.1070	5.9418	5.2079	4.6985	4.3217	4.0302	3.7971	3.6058	3.3091	2.9973	2.6647	2.4506	2.2994	2.0970	1.9656	1.8722	1.7725	1.6641	1.5045	1.3741	1.2656	
2,000	.9	2.7081	2.3052	2.0865	1.9477	1.8502	1.7771	1.7197	1.6733	1.6347	1.6019	1.5491	1.4906	1.4243	1.3792	1.3460	1.2996	1.2681	1.2450	1.2196	1.1910	1.1466	1.1077	1.0721	2,000
	.95	3.8461	3.0002	2.6094	2.3764	2.2186	2.1031	2.0142	1.9430	1.8846	1.8354	1.7570	1.6714	1.5758	1.5116	1.4648	1.4001	1.3567	1.3250	1.2903	1.2516	1.1920	1.1402	1.0935	
	.975	5.0315	3.6957	3.1226	2.7922	2.5728	2.4145	2.2938	2.1981	2.1200	2.0547	1.9512	1.8392	1.7154	1.6330	1.5734	1.4915	1.4368	1.3971	1.3538	1.3058	1.2323	1.1691	1.1123	
F_{ν_1,ν_2}	.99	6.6476	4.6158	3.7914	3.3285	3.0264	2.8110	2.6482	2.5201	2.4162	2.3298	2.1936	2.0475	1.8875	1.7820	1.7061	1.6025	1.5338	1.4842	1.4304	1.3708	1.2805	1.2033	1.1346	F_{ν_1,ν_2}
	.999	10.8596	6.9317	5.4428	4.6358	4.1210	3.7603	3.4914	3.2820	3.1137	2.9748	2.7582	2.5287	2.2812	2.1204	2.0059	1.8513	1.7500	1.6774	1.5993	1.5137	1.3853	1.2772	1.1823	
	.9999	15.1979	9.2529	7.0713	5.9099	5.1783	4.6705	4.2949	4.0042	3.7718	3.5810	3.2850	2.9740	2.6419	2.4280	2.2768	2.0742	1.9424	1.8486	1.7482	1.6387	1.4760	1.3406	1.2230	
3,000	.9	2.7072	2.3044	2.0856	1.9467	1.8492	1.7761	1.7187	1.6722	1.6336	1.6008	1.5480	1.4894	1.4231	1.3779	1.3446	1.2981	1.2665	1.2433	1.2178	1.1890	1.1442	1.1045	1.0676	3,000
	.95	3.8446	2.9987	2.6079	2.3749	2.2171	2.1016	2.0126	1.9415	1.8830	1.8339	1.7554	1.6697	1.5740	1.5098	1.4629	1.3981	1.3545	1.3227	1.2878	1.2489	1.1887	1.1361	1.0875	
	.975	5.0289	3.6934	3.1205	2.7901	2.5707	2.4124	2.2917	2.1960	2.1179	2.0526	1.9490	1.8370	1.7131	1.6306	1.5709	1.4888	1.4340	1.3941	1.3507	1.3024	1.2283	1.1640	1.1051	
	.99	6.6433	4.6122	3.7881	3.3254	3.0233	2.8080	2.6453	2.5172	2.4132	2.3268	2.1907	2.0445	1.8844	1.7789	1.7029	1.5991	1.5302	1.4804	1.4265	1.3666	1.2755	1.1971	1.1259	
	.999	10.8489	6.9237	5.4359	4.6294	4.1150	3.7545	3.4858	3.2765	3.1083	2.9695	2.7529	2.5235	2.2761	2.1152	2.0006	1.8459	1.7444	1.6716	1.5933	1.5073	1.3779	1.2683	1.1702	
	.9999	15.1775	9.2387	7.0595	5.8993	5.1685	4.6612	4.2860	3.9956	3.7634	3.5728	3.2771	2.9663	2.6343	2.4205	2.2693	2.0667	1.9347	1.8407	1.7401	1.6302	1.4665	1.3292	1.2077	
4,000	.9	2.7068	2.3039	2.0852	1.9463	1.8487	1.7756	1.7182	1.6717	1.6331	1.6003	1.5474	1.4889	1.4224	1.3772	1.3439	1.2974	1.2657	1.2425	1.2169	1.1880	1.1429	1.1029	1.0652	4,000
	.95	3.8438	2.9980	2.6071	2.3742	2.2163	2.1009	2.0119	1.9407	1.8822	1.8331	1.7546	1.6689	1.5732	1.5089	1.4620	1.3971	1.3534	1.3215	1.2866	1.2475	1.1871	1.1340	1.0845	
	.975	5.0277	3.6923	3.1194	2.7890	2.5697	2.4114	2.2907	2.1950	2.1168	2.0515	1.9480	1.8359	1.7119	1.6294	1.5697	1.4875	1.4326	1.3927	1.3492	1.3007	1.2263	1.1614	1.1014	
	.99	6.6412	4.6105	3.7865	3.3239	3.0218	2.8065	2.6438	2.5157	2.4117	2.3253	2.1892	2.0430	1.8829	1.7773	1.7013	1.5974	1.5284	1.4786	1.4245	1.3645	1.2730	1.1939	1.1213	
	.999	10.8436	6.9197	5.4324	4.6262	4.1120	3.7516	3.4830	3.2738	3.1056	2.9668	2.7503	2.5209	2.2735	2.1126	1.9980	1.8432	1.7416	1.6688	1.5903	1.5041	1.3743	1.2638	1.1639	
	.9999	15.1673	9.2316	7.0536	5.8940	5.1636	4.6566	4.2815	3.9913	3.7592	3.5687	3.2731	2.9624	2.6306	2.4168	2.2656	2.0629	1.9309	1.8368	1.7360	1.6259	1.4617	1.3234	1.1998	
5,000	.9	2.7065	2.3036	2.0849	1.9460	1.8484	1.7753	1.7179	1.6714	1.6328	1.6000	1.5471	1.4885	1.4221	1.3768	1.3435	1.2969	1.2653	1.2420	1.2163	1.1874	1.1422	1.1019	1.0638	5,000
	.95	3.8433	2.9975	2.6067	2.3737	2.2159	2.1004	2.0114	1.9403	1.8818	1.8326	1.7541	1.6684	1.5726	1.5083	1.4614	1.3964	1.3527	1.3208	1.2859	1.2467	1.1861	1.1327	1.0826	
	.975	5.0269	3.6916	3.1187	2.7884	2.5690	2.4107	2.2901	2.1943	2.1162	2.0509	1.9473	1.8352	1.7112	1.6287	1.5689	1.4867	1.4317	1.3918	1.3483	1.2997	1.2251	1.1598	1.0991	
	.99	6.6400	4.6094	3.7855	3.3229	3.0209	2.8056	2.6429	2.5148	2.4109	2.3245	2.1883	2.0421	1.8820	1.7763	1.7003	1.5964	1.5274	1.4775	1.4233	1.3632	1.2715	1.1920	1.1186	
	.999	10.8404	6.9173	5.4304	4.6243	4.1102	3.7499	3.4813	3.2721	3.1039	2.9652	2.7487	2.5194	2.2719	2.1110	1.9964	1.8415	1.7399	1.6670	1.5885	1.5022	1.3720	1.2610	1.1600	
	.9999	15.1612	9.2273	7.0500	5.8908	5.1607	4.6538	4.2788	3.9887	3.7567	3.5662	3.2707	2.9601	2.6283	2.4146	2.2634	2.0606	1.9286	1.8345	1.7336	1.6234	1.4588	1.3200	1.1950	
7,500	.9	2.7062	2.3033	2.0845	1.9456	1.8480	1.7749	1.7175	1.6710	1.6324	1.5996	1.5467	1.4881	1.4216	1.3763	1.3430	1.2963	1.2646	1.2413	1.2156	1.1866	1.1412	1.1007	1.0618	7,500
	.95	3.8427	2.9969	2.6061	2.3731	2.2153	2.0998	2.0108	1.9396	1.8811	1.8320	1.7535	1.6677	1.5719	1.5076	1.4606	1.3956	1.3519	1.3199	1.2849	1.2456	1.1848	1.1310	1.0800	
	.975	5.0259	3.6907	3.1179	2.7875	2.5682	2.4099	2.2892	2.1935	2.1153	2.0500	1.9465	1.8343	1.7103	1.6278	1.5680	1.4857	1.4306	1.3906	1.3470	1.2983	1.2234	1.1577	1.0960	
	.99	6.6383	4.6080	3.7842	3.3217	3.0197	2.8044	2.6417	2.5136	2.4097	2.3233	2.1871	2.0409	1.8808	1.7751	1.6990	1.5950	1.5259	1.4760	1.4217	1.3615	1.2694	1.1894	1.1148	
	.999	10.8361	6.9141	5.4276	4.6218	4.1078	3.7476	3.4790	3.2699	3.1018	2.9631	2.7466	2.5173	2.2699	2.1089	1.9943	1.8394	1.7377	1.6647	1.5861	1.4996	1.3691	1.2574	1.1548	
	.9999	15.1530	9.2217	7.0453	5.8866	5.1568	4.6501	4.2753	3.9853	3.7533	3.5629	3.2675	2.9570	2.6253	2.4116	2.2604	2.0576	1.9255	1.8313	1.7304	1.6200	1.4550	1.3153	1.1885	
10,000	.9	2.7060	2.3031	2.0843	1.9454	1.8478	1.7747	1.7173	1.6708	1.6321	1.5994	1.5464	1.4878	1.4213	1.3760	1.3427	1.2960	1.2643	1.2410	1.2152	1.1862	1.1407	1.1000	1.0608	10,000
	.95	3.8424	2.9966	2.6058	2.3728	2.2150	2.0995	2.0105	1.9393	1.8808	1.8316	1.7531	1.6674	1.5716	1.5072	1.4602	1.3952	1.3514	1.3194	1.2844	1.2451	1.1841	1.1301	1.0787	
	.975	5.0254	3.6902	3.1174	2.7871	2.5678	2.4095	2.2888	2.1931	2.1149	2.0496	1.9460	1.8339	1.7099	1.6273	1.5675	1.4851	1.4301	1.3900	1.3464	1.2977	1.2226	1.1567	1.0944	
	.99	6.6374	4.6073	3.7836	3.3210	3.0191	2.8038	2.6411	2.5130	2.4091	2.3227	2.1865	2.0403	1.8801	1.7745	1.6983	1.5943	1.5252	1.4752	1.4209	1.3606	1.2684	1.1881	1.1129	
	.999	10.8340	6.9125	5.4262	4.6205	4.1066	3.7464	3.4779	3.2688	3.1007	2.9620	2.7456	2.5163	2.2688	2.1079	1.9933	1.8383	1.7366	1.6636	1.5849	1.4983	1.3676	1.2555	1.1521	
	.9999	15.1489	9.2188	7.0429	5.8845	5.1548	4.6483	4.2735	3.9836	3.7517	3.5613	3.2660	2.9555	2.6238	2.4101	2.2589	2.0561	1.9240	1.8298	1.7288	1.6183	1.4530	1.3129	1.1851	
		1	2	3	4	5	6	7	8	9	10	12	15	20	25	30	40	50	60	75	100	175	350	1,000	

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