Figure 13.13h. *99th* 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 $\Pr(Y \le y) = 0.99$ (ν_1 is the numerator, ν_2 the denominator, degrees of freedom)

$Df \rightarrow$ / ν_2 / 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	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	1
2	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	
3	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	
4	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	
5	16.258	13.274	12.060	11.391	10.967	10.672	10.455	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	5
6	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	
7	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	
8	11.259	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	
9	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	
10	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	10
11	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	
12	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	
13	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	
14	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	
15	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	15
16	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	
17	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	
18	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	
19	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	
20	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	20
22	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	
24	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	
26	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	
28	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	
30	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	30
35	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	
40	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	
45	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	
50	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	50
60	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	
70	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	
80	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	
90	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	
100	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	100
125	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	
150	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	
175	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	
200	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	
250	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	250
300	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	
350	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	
400	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	
450	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	
500	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	500
600	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	
700	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	
800	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	
900	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	
1,000	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	1,000
2,000	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	
3,000	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	
4,000	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	
5,000	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	
7,500	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	
10,000	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	10,000
	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} .99

F_{ν_1,ν_2} .99

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