University of Waterloo

90*th* PERCENTILES FOR THE *F* DISTRIBUTION [F_{ν_1,ν_2}]

[Calculated with *qf* in **R** Version 2.0.1 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 $\Pr(Y \le y) = 0.9$ (ν_1 is the numerator, ν_2 the denominator, degrees of freedom)

$F^{\nu_1,\nu_2}_{.90}$

Df → ↓ 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	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
2	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	
3	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	
4	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	
5	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
6	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	
7	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	
8	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	
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	
10	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
11	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	
12	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	
13	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	
14	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	
15	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
16	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	
17	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	
18	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	
19	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	
20	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
22	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	
24	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	
26	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	
28	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	
30	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
35	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	
40	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	
45	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	
50	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
60	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	
70	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	
80	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	
90	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	
100	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
125	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	
150	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	
175	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	
200	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	
250	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
300	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	
350	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	
400	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	
450	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	
500	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
600	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	
700	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	
800	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	
900	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	
1,000	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
2,000	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	
3,000	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	
4,000	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	
5,000	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	
7,500	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	
10,000	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
	1	2	3	4	5	6	7	8	9	10	12	15	20	25	30	40	50	60	75	100	175	350	1,000	

$F^{\nu_1,\nu_2}_{.90}$

W. H. Cherry

2017-02-20