

Figure 13.13m. 99.995th PERCENTILES FOR THE F DISTRIBUTION $[F_{v_1, v_2}]$ [Calculated with qf in R Version 3.2.2 using 17-digit arithmetic; the accuracy of all digits in the table entries has not been verified]

$\downarrow \begin{matrix} df \rightarrow \\ v_2 / v_1 \end{matrix}$		Each table entry is the value (y) of the random variable $Y \sim F_{v_1, v_2}$ such that $\Pr(Y \leq y) = 0.99995$ (v_1 is the numerator, v_2 the denominator, degrees of freedom)																								
		1	2	3	4	5	6	7	8	9	10	12	15	20	25	30	40	50	60	75	100	175	350	1,000		
2017-02-20	1	16211893	200 000 000	216151858	225 000 000	230561982	234375000	237149467	239257812	240913744	242248535	244267273	246305607	248363209	249606871	250439721	251484949	252114288	252534758	252955952	253377868	253921385	254284386	254520617	1	
	2	19998.5	19999.0	19999.2	19999.2	19999.3	19999.3	19999.4	19999.4	19999.4	19999.4	19999.4	19999.4	19999.4	19999.5	19999.5	19999.5	19999.5	19999.5	19999.5	19999.5	19999.5	19999.5	19999.5		
	3	1245.94	110371	1047.34	1016.86	99771	984.57	974.98	967.67	961.92	957.27	950.23	943.09	935.86	931.47	928.52	924.82	922.59	921.09	919.59	918.09	916.15	914.86	914.01		
	4	343.08	280.84	256.64	243.61	235.44	229.83	225.73	222.61	220.14	218.15	215.13	212.07	208.96	207.07	205.80	204.20	203.24	202.59	201.95	201.30	200.46	199.90	199.53		
	5	166.225	128.826	114.472	106.771	101.943	98.626	96.204	94.356	92.899	91.720	89.930	88.111	86.262	85.138	84.381	83.428	82.852	82.466	82.079	81.690	81.188	80.852	80.632	5	
	6	105.286	78.433	68.220	62.754	59.329	56.975	55.255	53.943	52.907	52.069	50.794	49.498	48.179	47.375	46.834	46.151	45.738	45.462	45.183	44.904	44.543	44.302	44.144		
	7	77.132	55.783	47.718	43.408	40.709	38.854	37.497	36.461	35.643	34.981	33.973	32.947	31.901	31.263	30.833	30.290	29.962	29.741	29.519	29.297	29.009	28.815	28.689		
	8	61.633	43.568	36.777	33.154	30.885	29.324	28.183	27.311	26.622	26.064	25.214	24.348	23.463	22.923	22.559	22.098	21.819	21.632	21.443	21.254	21.008	20.844	20.736		
	9	52.060	36.144	30.184	27.006	25.017	23.648	22.647	21.881	21.276	20.786	20.038	19.276	18.496	18.019	17.697	17.290	17.043	16.877	16.710	16.542	16.324	16.178	16.082		
	10	45.654	31.239	25.857	22.990	21.195	19.959	19.055	18.364	17.817	17.373	16.697	16.006	15.299	14.867	14.574	14.203	13.978	13.827	13.674	13.521	13.322	13.188	13.101	10	
F_{v_1, v_2} 99995	11	41.1083	27.7942	22.8353	20.1955	18.5423	17.4045	16.5713	15.9336	15.4293	15.0201	14.3958	13.7575	13.1033	12.7021	12.4307	12.0866	11.8774	11.7367	11.5950	11.4521	11.2669	11.1423	11.0608		
	12	37.7348	25.2600	20.6231	18.1558	16.6105	15.5467	14.7674	14.1707	13.6986	13.3154	12.7304	12.1318	11.5175	11.1404	10.8850	10.5609	10.3636	10.2308	10.0970	9.9621	9.7870	9.6691	9.5920		
	13	35.1426	23.3270	18.9425	16.6103	15.1496	14.1438	13.4066	12.8420	12.3951	12.0322	11.4780	10.9103	10.3271	9.9686	9.7257	9.4170	9.2290	9.1024	8.9746	8.8458	8.6784	8.5656	8.4918		
	14	33.0943	21.8092	17.6274	15.4038	14.0109	13.0516	12.3483	11.8094	11.3827	11.0361	10.5064	9.9635	9.4052	9.0616	8.8285	8.5322	8.3514	8.2296	8.1067	7.9826	7.8212	7.7124	7.6412		
	15	31.4383	20.5887	16.5732	14.4385	13.1013	12.1800	11.5044	10.9867	10.5765	10.2432	9.7336	9.2109	8.6728	8.3413	8.1163	7.8298	7.6550	7.5370	7.4180	7.2977	7.1411	7.0355	6.9663	15	
	16	30.0738	19.5879	15.7110	13.6505	12.3596	11.4701	10.8176	10.3174	9.9210	9.5987	9.1059	8.6000	8.0786	7.7571	7.5387	7.2604	7.0903	6.9756	6.8597	6.7425	6.5898	6.4867	6.4191		
	17	28.9315	18.7535	14.9939	12.9961	11.7444	10.8817	10.2487	9.7633	9.3785	9.0657	8.5869	8.0951	7.5879	7.2748	7.0619	6.7904	6.6243	6.5122	6.3989	6.2842	6.1347	6.0337	5.9674		
	18	27.9619	18.0480	14.3889	12.4448	11.2266	10.3869	9.7706	9.2978	8.9230	8.6181	8.1514	7.6717	7.1764	6.8705	6.6622	6.3965	6.2338	6.1239	6.0127	5.9001	5.7533	5.6540	5.5887		
	19	27.1293	17.4441	13.8720	11.9743	10.7852	9.9653	9.3635	8.9017	8.5354	8.2375	7.7811	7.3118	6.8269	6.5271	6.3228	6.0620	5.9022	5.7941	5.6847	5.5739	5.4293	5.3314	5.2670		
	20	26.4069	16.9217	13.4256	11.5686	10.4048	9.6023	9.0130	8.5608	8.2020	7.9101	7.4628	7.0026	6.5267	6.2321	6.0313	5.7747	5.6173	5.5108	5.4030	5.2937	5.1509	5.0541	4.9905	20	
F_{v_1, v_2} 99995	22	25.2165	16.0642	12.6945	10.9050	9.7833	9.0096	8.4413	8.0049	7.6586	7.3767	6.9445	6.4992	6.0381	5.7522	5.5571	5.3073	5.1539	5.0499	4.9445	4.8376	4.6976	4.6026	4.5400		
	24	24.2770	15.3905	12.1216	10.3859	9.2979	8.5471	7.9954	7.5717	7.2353	6.9613	6.5410	6.1077	5.6583	5.3792	5.1885	4.9440	4.7935	4.6915	4.5880	4.4827	4.3448	4.2510	4.1891		
	26	23.5173	14.8479	11.6612	9.9693	8.9087	8.1766	7.6386	7.2251	6.8968	6.6293	6.2187	5.7949	5.3550	5.0814	4.8941	4.6538	4.5057	4.4052	4.3030	4.1991	4.0626	3.9696	3.9082		
	28	22.8907	14.4017	11.2834	9.6280	8.5900	7.8735	7.3467	6.9418	6.6202	6.3580	5.9555	5.5397	5.1075	4.8383	4.6540	4.4170	4.2708	4.1714	4.0703	3.9673	3.8319	3.7394	3.6783		
	30	22.3653	14.0286	10.9679	9.3433	8.3245	7.6211	7.1038	6.7062	6.3901	6.1325	5.7367	5.3276	4.9018	4.6364	4.4544	4.2202	4.0755	3.9770	3.8767	3.7745	3.6398	3.5477	3.4867	30	
	35	21.3612	13.3185	10.3689	8.8035	7.8217	7.1435	6.6445	6.2607	5.9555	5.7065	5.3237	4.9273	4.5140	4.2556	4.0779	3.8487	3.7066	3.6097	3.5107	3.4096	3.2758	3.1840	3.1230		
	40	20.6471	12.8157	9.9459	8.4231	7.4678	6.8077	6.3219	5.9480	5.6505	5.4077	5.0341	4.6469	4.2422	3.9887	3.8141	3.5881	3.4477	3.3517	3.2535	3.1528	3.0192	2.9270	2.8656		
	45	20.1135	12.4413	9.6317	8.1408	7.2055	6.5590	6.0831	5.7167	5.4250	5.1869	4.8202	4.4398	4.0415	3.7916	3.6191	3.3955	3.2561	3.1606	3.0628	2.9622	2.8283	2.7355	2.6735		
	50	19.6999	12.1519	9.3891	7.9232	7.0035	6.3676	5.8994	5.5387	5.2516	5.0171	4.6558	4.2806	3.8874	3.6401	3.4692	3.2473	3.1086	3.0134	2.9157	2.8151	2.6806	2.5871	2.5244	50	
	60	19.1006	11.7339	9.0394	7.6099	6.7128	6.0925	5.6354	5.2833	5.0028	4.7735	4.4200	4.0524	3.6663	3.4228	3.2541	3.0343	2.8964	2.8015	2.7037	2.6026	2.4666	2.3714	2.3071		
70	18.6875	11.4467	8.7996	7.3954	6.5140	5.9044	5.4551	5.1088	4.8328	4.6072	4.2591	3.8968	3.5155	3.2745	3.1072	2.8887	2.7512	2.6562	2.5582	2.4564	2.3188	2.2217	2.1557			
80	18.3856	11.2372	8.6250	7.2393	6.3695	5.7677	5.3241	4.9821	4.7095	4.4866	4.1424	3.7839	3.4061	3.1669	3.0006	2.7829	2.6455	2.5504	2.4520	2.3495	2.2102	2.1113	2.0437			
90	18.1554	11.0778	8.4922	7.1207	6.2597	5.6640	5.2247	4.8860	4.6160	4.3951	4.0540	3.6983	3.3231	3.0853	2.9197	2.7025	2.5651	2.4699	2.3710	2.2678	2.1269	2.0263	1.9570			
100	17.9740	10.9524	8.3878	7.0275	6.1735	5.5825	5.1468	4.8106	4.5426	4.3233	3.9846	3.6312	3.2580	3.0212	2.8562	2.6393	2.5019	2.4065	2.3072							

Figure 13.13n. 99.999th 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]

$\downarrow \nu_2 \rightarrow$		Each table entry is the value (y) of the random variable $Y \sim F_{\nu_1, \nu_2}$ such that $\Pr(Y \leq y) = 0.99999$ (ν_1 is the numerator, ν_2 the denominator, degrees of freedom)																									1
		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		
2017-02-20	1	4052847345	5000000000	5403796400	5625000000	5764049558	5859375000	5928736688	5981445312	6022843620	6056213379	6106681823	6157640175	6209080226	6240171780	6260993029	6287123725	6302857198	6313368946	6323898811	6334446708	6348034646	6357109661	6363015421	6363015421	1	
	2	99998.5	99999.0	99999.2	99999.2	99999.3	99999.3	99999.4	99999.4	99999.4	99999.4	99999.4	99999.4	99999.4	99999.5	99999.5	99999.5	99999.5	99999.5	99999.5	99999.5	99999.5	99999.5	99999.5	99999.5		
	3	3647.8	3230.2	3064.8	2975.3	2919.2	2880.6	2852.5	2831.1	2814.2	2800.6	2779.9	2759.0	2737.8	2724.9	2716.3	2705.4	2698.9	2694.5	2690.1	2685.7	2680.0	2676.2	2673.7	2673.7		
	4	771.26	630.46	575.79	546.39	527.95	515.29	506.04	499.00	493.45	488.96	482.16	475.25	468.24	463.98	461.12	457.52	455.35	453.89	452.43	450.97	449.08	447.81	446.99	446.99		
	5	320.30	247.50	219.64	204.71	195.36	188.94	184.25	180.67	177.85	175.57	172.11	168.60	165.02	162.85	161.39	159.55	158.44	157.69	156.94	156.19	155.22	154.57	154.15	154.15	5	
	6	1837.47	136.248	118.255	108.643	102.328	98.497	95.480	93.178	91.363	89.894	87.662	85.393	83.083	81.677	80.730	79.536	78.814	78.330	77.844	77.356	76.725	76.302	76.027	76.027		
	7	1257.73	90.394	77.095	70.007	65.574	62.530	60.306	58.608	57.269	56.185	54.536	52.858	51.148	50.106	49.403	48.517	47.980	47.620	47.258	46.895	46.425	46.110	45.905	45.905		
	8	95.698	67.131	56.455	50.775	47.224	44.786	43.004	41.644	40.570	39.700	38.376	37.028	35.653	34.813	34.247	33.532	33.098	32.807	32.515	32.221	31.840	31.585	31.418	31.418		
	9	77.924	53.620	44.578	39.774	36.772	34.710	33.203	32.052	31.143	30.406	29.285	28.142	26.974	26.260	25.778	25.169	24.800	24.552	24.302	24.051	23.726	23.508	23.365	23.365		
	10	66.427	45.000	37.057	32.842	30.209	28.400	27.077	26.067	25.268	24.621	23.636	22.630	21.601	20.972	20.547	20.009	19.682	19.463	19.242	19.019	18.731	18.538	18.411	18.411	10	
	11	58.484	39.112	31.952	28.156	25.785	24.156	22.965	22.054	21.334	20.751	19.861	18.953	18.024	17.454	17.069	16.581	16.285	16.085	15.885	15.683	15.421	15.244	15.129	15.129		
	12	52.717	34.878	28.300	24.815	22.639	21.143	20.049	19.213	18.552	18.016	17.198	16.362	15.505	14.980	14.625	14.174	13.900	13.716	13.530	13.343	13.100	12.936	12.829	12.829		
	13	48.364	31.707	25.578	22.333	20.306	18.913	17.894	17.115	16.498	15.998	15.236	14.455	13.655	13.164	12.831	12.409	12.152	11.978	11.804	11.628	11.400	11.246	11.145	11.145		
	14	44.9765	29.2563	23.4820	20.4259	18.5176	17.2060	16.2462	15.5119	14.9311	14.4597	13.7401	13.0037	12.2476	11.7830	11.4681	11.0681	10.8243	10.6601	10.4946	10.3275	10.1103	9.9640	9.8682	9.8682		
	15	42.2727	27.3119	21.8247	18.9218	17.1091	15.8632	14.9513	14.2533	13.7011	13.2529	12.5683	11.8673	11.1468	10.7037	10.4031	10.0210	9.7879	9.6309	9.4724	9.3123	9.1041	8.9638	8.8718	8.8718	15	
	16	40.0695	25.7357	20.4852	17.7085	15.9748	14.7829	13.9104	13.2424	12.7138	12.2846	11.6289	10.9569	10.2657	9.8402	9.5514	9.1839	8.9595	8.8082	8.6555	8.5011	8.3002	8.1647	8.0758	8.0758		
	17	38.2427	24.4347	19.3825	16.7115	15.0438	13.8973	13.0577	12.4148	11.9060	11.4926	10.8610	10.2133	9.5466	9.1358	8.8567	8.5013	8.2842	8.1377	7.9896	7.8400	7.6451	7.5134	7.4271	7.4271		
	18	36.7052	23.4443	18.4605	15.8792	14.2676	13.1594	12.3478	11.7262	11.2341	10.8343	10.2231	9.5960	8.9499	8.5515	8.2806	7.9354	7.7244	7.5819	7.4378	7.2921	7.1021	6.9737	6.8894	6.8894		
	19	35.3948	22.4183	17.6791	15.1749	13.6114	12.5362	11.7486	11.1453	10.6675	10.2793	9.6856	9.0761	8.4478	8.0599	7.7961	7.4596	7.2536	7.1145	6.9738	6.8314	6.6456	6.5199	6.4373	6.4373		
	20	34.2654	21.6228	17.0091	14.5718	13.0501	12.0035	11.2367	10.6493	10.1839	9.8057	9.2272	8.6330	8.0199	7.6412	7.3834	7.0544	6.8529	6.7166	6.5788	6.4392	6.2569	6.1335	6.0524	6.0524	20	
	22	32.4200	20.3284	15.9217	13.5946	12.1417	11.1422	10.4097	9.8484	9.4035	9.0419	8.4883	7.9191	7.3312	6.9674	6.7195	6.4026	6.2082	6.0766	5.9433	5.8082	5.6315	5.5116	5.4328	5.4328		
	24	30.9779	19.3219	15.0786	12.8385	11.4398	10.4775	9.7721	9.2313	8.8026	8.4540	7.9200	7.3706	6.8023	6.4502	6.2100	5.9024	5.7135	5.5855	5.4557	5.3240	5.1514	5.0342	4.9570	4.9570		
	26	29.8214	18.5180	14.4070	12.2372	10.8823	9.9501	9.2665	8.7423	8.3267	7.9885	7.4704	6.9369	6.3844	6.0417	5.8075	5.5075	5.3229	5.1977	5.0705	4.9414	4.7719	4.6566	4.5806	4.5806		
	28	28.8740	17.8618	13.8599	11.7481	10.4294	9.5219	8.8564	8.3459	7.9410	7.6115	7.1064	6.5860	6.0464	5.7113	5.4822	5.1881	5.0070	4.8840	4.7590	4.6319	4.4648	4.3510	4.2758	4.2758		
	30	28.0842	17.3165	13.4060	11.3429	10.0545	9.1678	8.5174	8.0184	7.6225	7.3002	6.8060	6.2965	5.7678	5.4390	5.2140	4.9249	4.7465	4.6253	4.5021	4.3765	4.2113	4.0986	4.0240	4.0240	30	
	35	26.5871	16.2872	12.5516	10.5813	9.3510	8.5039	7.8823	7.4052	7.0265	6.7180	6.2447	5.7559	5.2476	4.9308	4.7135	4.4335	4.2603	4.1423	4.0220	3.8992	3.7370	3.6258	3.5521	3.5521		
	40	25.5323	15.5656	11.9543	10.0502	8.8611	8.0422	7.4411	6.9795	6.6130	6.3144	5.8557	5.3816	4.8878	4.5792	4.3672	4.0935	3.9236	3.8077	3.6893	3.5681	3.4074	3.2968	3.2233	3.2233		
	45	24.7498	15.0323	11.5140	9.6592	8.5009	7.7030	7.1173	6.6673	6.3099	6.0185	5.5709	5.1077	4.6245	4.3220	4.1139	3.8445	3.6771	3.5625	3.4453	3.3250	3.1651	3.0545	2.9808	2.9808		
	50	24.1465	14.6223	11.1762	9.3597	8.2252	7.4437	6.8697	6.4288	6.0784	5.7927	5.3535	4.8987	4.4237	4.1259	3.9207	3.6546	3.4889	3.3753	3.2588	3.1390	2.9793	2.8685	2.7943	2.7943	50	
	60	23.2777	14.0340	10.6923	8.9312	7.8313	7.0734	6.5166	6.0887	5.7485	5.4710	5.0441	4.6015	4.1381	3.8470	3.6458	3.3842	3.2206	3.1082	2.9925	2.8731	2.7129	2.6010	2.5256	2.5256		
	70	22.6826	13.6323	10.3627	8.6399	7.5637	6.8221	6.2772	5.8582	5.5250	5.2531	4.8347	4.4003	3.9450	3.6583	3.4598	3.2011	3.0388	2.9269	2.8115	2.6920	2.5308	2.4174	2.3405	2.3405		
	80	22.2496	13.3409	10.1238	8.4289	7.3702	6.6405	6.1042	5.6918	5.3637	5.0960	4.6836	4.2553	3.8058	3.5222	3.3256	3.0689	2.9074	2.7958	2.6805	2.5606	2.3982	2.2832	2.2048	2.2048		
	90	21.9205	13.1197	9.9428	8.2693	7.2238	6.5032	5.9735	5.5660	5.2419	4.9772	4.5696	4.1459	3.7007	3.4195	3.2243	2.9690	2.8080	2.6965	2.5811	2.4609	2.2972	2.1806	2.1006	2.1006		
	100	21.6620	12.9463	9.8010	8.1442	7.1092	6.3957	5.8712	5.4677	5.1466	4.8844	4.4804															