Figure 13.13p. 99.9999*th* 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 $\Pr(Y \le y) = 0.999\,999$ (ν_1 is the numerator, ν_2 the denominator, degrees of freedom)

$Df \rightarrow$ / ν_2 / ν_1

ν_2	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	405 284 734 545	499 999 999 971	540 379 646 061	562 499 999 967	576 404 955 798	585 937 499 966	592 873 668 821	598 144 531 215	602 284 361 977	605 621 337 855	610 668 182 338	615 764 017 527	620 908 022 648	624 017 177 963	626 099 302 860	628 712 372 532	630 285 719 746	631 336 894 630	632 389 881 125	633 444 670 751	634 803 464 541	635 710 966 051	636 301 542 062	1
2	999 998.5	999 999.0	999 999.2	999 999.2	999 999.3	999 999.3	999 999.4	999 999.4	999 999.4	999 999.4	999 999.4	999 999.4	999 999.4	999 999.5	999 999.5	999 999.5	999 999.5	999 999.5	999 999.5	999 999.5	999 999.5	999 999.5	999 999.5	2
3	16 940.2	14 998.5	14 229.7	13 814.1	13 553.1	13 373.9	13 243.2	13 143.7	13 065.3	13 002.0	12 906.0	12 808.7	12 710.2	12 650.4	12 610.3	12 559.9	12 529.4	12 509.1	12 488.6	12 468.2	12 441.8	12 424.4	12 412.6	3
4	2 446.16	1 998.00	1 824.19	1 730.72	1 672.12	1 631.88	1 602.52	1 580.14	1 562.51	1 548.26	1 526.64	1 504.70	1 482.44	1 468.92	1 459.84	1 448.40	1 441.50	1 436.88	1 432.24	1 427.59	1 421.59	1 417.57	1 414.96	4
5	811.02	625.47	554.59	516.64	492.88	476.57	464.67	455.59	448.43	442.65	433.86	424.94	415.87	410.36	406.65	401.98	399.16	397.27	395.37	393.47	391.01	389.36	388.29	5
6	401.92	297.00	257.37	236.23	223.01	213.94	207.32	202.27	198.28	195.06	190.17	185.19	180.13	177.05	174.97	172.36	170.77	169.71	168.65	167.58	166.20	165.27	164.67	6
7	248.599	177.782	151.266	137.160	128.349	122.302	117.888	114.521	111.864	109.715	106.447	103.123	99.737	97.674	96.284	94.530	93.468	92.756	92.041	91.322	90.393	89.771	89.364	7
8	175.752	122.491	102.683	92.170	85.608	81.106	77.819	75.311	73.332	71.730	69.293	66.813	64.284	62.741	61.701	60.387	59.591	59.057	58.520	57.981	57.283	56.814	56.509	8
9	135.415	92.450	76.556	68.135	62.883	59.281	56.650	54.642	53.058	51.774	49.822	47.832	45.802	44.562	43.726	42.669	42.027	41.597	41.164	40.729	40.165	39.787	39.540	9
10	110.597	74.245	60.855	53.772	49.357	46.328	44.116	42.428	41.095	40.016	38.372	36.696	34.985	33.938	33.232	32.338	31.796	31.431	31.065	30.696	30.218	29.898	29.688	10
11	94.118	62.307	50.631	44.462	40.618	37.982	36.057	34.586	33.425	32.485	31.052	29.591	28.097	27.183	26.565	25.783	25.308	24.988	24.667	24.344	23.924	23.642	23.458	11
12	82.532	54.000	43.558	38.048	34.615	32.261	30.541	29.228	28.191	27.350	26.069	24.762	23.424	22.605	22.051	21.349	20.922	20.635	20.346	20.055	19.677	19.423	19.257	12
13	74.017	47.949	38.432	33.414	30.289	28.146	26.581	25.385	24.440	23.674	22.507	21.315	20.094	19.346	18.839	18.197	17.806	17.543	17.278	17.011	16.665	16.432	16.279	13
14	67.536 2	43.378 0	34.577 1	29.939 9	27.052 7	25.072 9	23.626 4	22.521 2	21.648 0	20.940 0	19.860 5	18.757 3	17.626 4	16.932 6	16.462 7	15.866 5	15.503 4	15.259 1	15.012 7	14.764 2	14.441 5	14.224 2	14.082 0	14
15	62.461 1	39.821 8	31.589 1	27.254 1	24.555 6	22.705 1	21.353 1	20.319 8	19.503 3	18.841 1	17.831 1	16.798 3	15.738 9	15.088 3	14.647 5	14.087 6	13.746 4	13.516 7	13.284 9	13.050	12.747 1	12.542 2	12.408 1	15
16	58.392 7	36.987 3	29.215 5	25.125 4	22.579 9	20.834 3	19.558 7	18.583 7	17.813 1	17.188 0	16.234 3	15.258 6	14.256 9	13.641 3	13.223 9	12.693 4	12.369 9	12.151 9	11.931 9	11.709 7	11.420 8	11.226 0	11.098 3	16
17	55.066 9	34.681 9	27.290 7	23.402 8	20.983 5	19.324 4	18.111 8	17.184 9	16.452 2	15.857 7	14.950 4	14.021 8	13.067 7	12.480 9	12.088 28	11.576 3	11.267 3	11.058 9	10.848 6	10.636 0	10.359 4	10.172 7	10.050 3	17
18	52.302 7	32.774 3	25.702 3	21.983 9	19.670 3	18.083 7	16.924 0	16.037 4	15.336 4	14.767 5	13.899 1	13.009 8	12.095 6	11.532 8	11.150 8	10.664 5	10.367 5	10.167 2	9.964 8	9.760 2	9.493 7	9.313 7	9.195 7	18
19	49.972 4	31.172 7	24.371 8	20.797 4	18.573 6	17.048 5	15.933 7	15.081 3	14.407 2	13.860 1	13.024 6	12.168 8	11.288 3	10.745 9	10.377 5	9.908 2	9.621 4	9.427 8	9.232 1	9.034 2	8.776 3	8.601 9	8.487 5	19
20	47.983 8	29.810 7	23.242 9	19.792 1	17.645 5	16.173 2	15.097 0	14.273 9	13.622 9	13.094 5	12.287 4	11.460 1	10.608 6	10.083 7	9.726 9	9.272 1	8.994 0	8.806 1	8.616 2	8.424 0	8.173 3	8.003 7	7.892 3	20
22	44.774 6	27.623 1	21.434 7	18.185 1	16.163 9	14.777 7	13.764 1	12.988 8	12.375 4	11.877 3	11.116 2	10.335 4	9.530 9	9.034 2	8.696 3	8.264 9	8.000 8	7.822 2	7.641 4	7.458 3	7.219 1	7.057 0	6.950 5	22
24	42.302 8	25.947 3	20.054 1	16.961 0	15.037 3	13.717 9	12.753 1	12.014 8	11.430 6	10.956 1	10.230 7	9.486 1	8.717 9	8.243 1	7.919 7	7.506 4	7.253 0	7.081 5	6.907 7	6.731 4	6.500 9	6.344 5	6.241 5	24
26	40.344 1	24.625 5	18.968 1	16.000 0	14.154 3	12.888 2	11.962 2	11.253 6	10.692 7	10.237 0	9.540 1	8.824 3	8.085 0	7.627 6	7.315 7	6.916 7	6.671 6	6.505 6	6.337 3	6.166 4	5.942 5	5.790 4	5.690 1	26
28	38.755 8	23.557 7	18.093 1	15.226 9	13.444 8	12.222 3	11.328 1	10.643 6	10.101 7	9.661 3	8.987 7	8.295 3	7.579 6	7.136 2	6.833 6	6.446 1	6.207 9	6.046 3	5.882 3	5.715 6	5.497 0	5.348 2	5.250 0	28
30	37.443 1	22.678 3	17.373 8	14.592 4	12.863 2	11.676 9	10.809 0	10.144 6	9.618 5	9.190 8	8.536 5	7.863 5	7.167 3	6.735 6	6.440 7	6.062 7	5.829 9	5.672 0	5.511 5	5.348 2	5.133 8	4.987 6	4.891 0	30
35	34.984 1	21.038 5	16.036 5	13.415 3	11.785 8	10.667 7	9.849 6	9.223 1	8.726 7	8.323 1	7.705 1	7.068 7	6.409 2	5.999 3	5.718 7	5.358 2	5.135 6	4.984 2	4.830 1	4.672 9	4.465 7	4.324 0	4.230 0	35
40	33.275 1	19.905 2	15.115 5	12.606 5	11.046 9	9.976 8	9.193 5	8.593 5	8.118 0	7.731 2	7.138 6	6.527 8	5.893 8	5.499 0	5.228 3	4.879 7	4.664 0	4.517 0	4.367 0	4.213 7	4.011 0	3.871 7	3.779 1	40
45	32.020 4	19.076 6	14.443 9	12.017 9	10.510 0	9.475 2	8.717 7	8.137 2	7.677 2	7.302 8	6.728 9	6.137 0	5.521 7	5.138 0	4.874 5	4.534 5	4.323 6	4.179 6	4.032 5	3.881 8	3.681 9	3.544 0	3.452 1	45
50	31.060 8	18.445 0	13.933 0	11.570 8	10.102 6	9.095 0	8.357 3	7.791 9	7.343 7	6.978 9	6.419 4	5.841 9	5.241 0	4.865 7	4.607 6	4.274 1	4.066 8	3.925 0	3.779 9	3.631 0	3.432 8	3.295 6	3.203 9	50
60	29.691 0	17.546 8	13.208 1	10.937 6	9.526 4	8.557 9	7.848 5	7.304 8	6.873 5	6.522 4	5.983 5	5.426 7	4.846 2	4.482 9	4.232 5	3.907 9	3.705 5	3.566 6	3.424 1	3.277 2	3.080 7	2.943 8	2.851 7	60
70	28.761 2	16.939 4	12.719 1	10.511 2	9.138 9	8.197 0	7.507 1	6.978 1	6.558 4	6.216 6	5.691 8	5.149 1	4.582 4	4.227 1	3.981 8	3.663 1	3.463 8	3.326 7	3.185 6	3.039 8	2.843 7	2.706 1	2.613 0	70
80	28.089 1	16.501 5	12.367 3	10.204 7	8.860 7	7.938 1	7.262 3	6.744 0	6.332 7	5.997 7	5.483 1	4.950 5	4.393 9	4.044 3	3.802 7	3.488 1	3.290 9	3.154 9	3.014 7	2.869 4	2.673 0	2.534 4	2.440 1	80
90	27.580 8	16.171 0	12.102 1	9.974 0	8.651 4	7.743 5	7.078 4	6.568 2	6.163 2	5.833 3	5.326 5	4.801 7	4.252 6	3.907 3	3.668 4	3.356 8	3.161 1	3.025 9	2.886 3	2.741 1	2.544 1	2.404 3	2.308 6	90
100	27.183 0	15.912 8	11.895 1	9.794 0	8.488 3	7.591 9	6.935 1	6.431 3	6.031 4	5.705 5	5.204 7	4.685 9	4.142 8	3.800 9	3.564 0	3.254 8	3.060 1	2.925 5	2.786 2	2.641 0	2.443 2	2.302 1	2.205 0	100
125	26.486 1	15.461 5	11.533 7	9.480 2	8.204 1	7.327 9	6.685 8	6.193 1	5.802 0	5.483 2	4.993 0	4.484 8	3.952 0	3.616 0	3.382 7	3.077 4	2.884 5	2.750 7	2.611 6	2.466 1	2.266 2	2.121 7	2.021 1	125
150	26.034 8	15.169 8	11.300 6	9.277 9	8.021 0	7.157 9	6.525 4	6.040 0	5.654 6	5.340 4	4.857 1	4.355 8	3.829 7	3.497 4	3.266 4	2.963 4	2.771 6	2.638 1	2.499 1	2.353 0	2.150 9	2.003 4	1.899 4	150
175	25.718 8	14.965 9	11.137 8	9.136 8	7.893 3	7.039 5	6.413 7	5.933 4	5.551 9	5.240 9	4.762 5	4.266 0	3.744 5	3.414 9	3.185 5	2.884 1	2.692 9	2.559 6	2.420 5	2.273 8	2.069 8	1.919 5	1.812 4	175
200	25.485 2	14.815 4	11.017 6	9.032 6	7.799 2	6.952 2	6.331 3	5.854 8	5.476 3	5.167 7	4.692 9	4.199 9	3.681 9	3.354 1	3.125 9	2.825 7	2.634 9	2.501 7	2.362 4	2.215 2	2.009 5	1.856 7	1.748 8	200
250	25.163 0	14.607 9	10.852 2	8.889 4	7.669 7	6.832 1	6.218 1	5.746 8	5.372 5	5.067 1	4.597 2	4.109 2	3.595 9	3.270 8	3.044 1	2.745 4	2.555 2	2.422 0	2.282 4	2.134 3	1.925 7	1.776 7	1.653 8	250
300	24.951 2	14.471 7	10.743 6	8.795 4	7.584 8	6.753 5	6.144 0	5.676 2	5.304 5	5.001 3	4.534 7	4.049 8	3.539 7	3.216 3	2.990 6	2.692 9	2.502 9	2.369 8	2.229 9	2.081 0	1.870 2	1.709 8	1.590 5	300
350	24.801 4	14.375 5	10.667 0	8.729 1	7.524 9	6.698 0	6.091 7	5.626 3	5.256 5	4.954 9	4.490 5	4.008 0	3.500 0	3.177 8	2.952 9	2.655 9	2.466 1	2.332 9	2.192 8	2.043 3	1.830 6	1.667 4	1.544 5	350
400	24.689 9	14.303 9	10.610 0	8.679 8	7.480 4	6.656 7	6.052 8	5.589 2	5.220 9	4.920 4	4.457 7	3.976 9	3.470 6	3.149 3	2.924 8	2.628 3	2.438 6	2.305 4	2.165 1	2.015 1	1.801 0	1.635 4	1.509 3	400
450	24.603 7	14.248 5	10.565 9	8.641 7	7.446 0	6.624 8	6.022 8	5.560 6	5.193 3	4.893 7	4.432 4	3.952 9	3.447 8	3.127 2	2.903 2	2.607 0	2.417 5	2.284 2	2.143 7	1.993 3	1.777 9	1.610 4	1.481 5	450
500	24.534 9	14.204 4	10.530 8	8.611 3	7.418 6	6.599 5	5.998 9	5.537 8	5.171 4	4.872 5	4.412 3	3.933 8	3.429 8	3.109 7	2.886 0	2.590 1	2.400 6	2.267 3	2.126 6	1.975 9	1.759 5	1.590 3	1.458 9	500
600	24.432 4	14.138 6	10.478 4	8.566 1	7.377 8	6.561 6	5.963 3	5.503 8	5.138 8	4.840 9	4.382 3	3.905 4	3.402 8	3.083 5	2.860 3	2.564 9	2.375 4	2.242 1	2.101 2	1.949 9	1.731 8	1.559 8	1.424 2	600
700	24.359 4	14.091 8	10.441 2	8.533 9	7.348 7	6.534 8	5.938 0	5.479 7	5.115 6	4.818 5	4.360 9	3.885 2	3.383 7	3.065 0	2.842 1	2.546 9	2.357 6	2.224 2	2.083 1	1.931 4	1.712 0	1.537 9	1.398 9	700
800	24.304 9	14.056 9	10.413 4	8.509 9	7.327 1	6.514 7	5.919 1	5.461 7	5.098 3	4.801 7	4.345 0	3.870 1	3.369 4	3.051 2	2.828 5	2.533 6	2.344 2	2.210 8	2.069 5	1.917 6	1.697 2	1.521 3	1.379 5	800
900	24.262 7	14.029 8	10.391 9	8.491 3	7.310 3	6.499 2	5.904 4	5.447 8	5.084 9	4.788 7	4.332 7	3.858 4	3.358 3	3.040 4	2.817 9	2.523 2	2.333 9	2.200 4	2.059 0	1.906 8	1.685 6	1.508 4	1.364 1	900
1,000	24.228 9	14.008 1	10.374 7	8.476 4	7.296 9	6.486 8	5.892 8	5.436 6	5.074 2	4.778 4	4.322 9	3.849 1	3.349 5	3.031 9	2.809 5	2.514 9	2.325 6	2.192 1	2.050 6	1.898 2	1.676 4	1.497 9	1.351 6	1,000
2,000	24.077 9	13.911 4	10.297 8	8.411 0	7.237 0	6.431 3	5.840 5	5.386 9	5.026 3	4.732 1	4.278 9	3.807 4	3.310 0	2.993 6	2.772 0	2.477 9	2.288 7	2.155 0	2.013 1	1.859 7	1.634 6	1.450 3	1.292 6	2,000
3,000	24.027 8	13.879 3	10.272 3	8.388 0	7.217 1	6.412 9	5.823 2	5.370 4	5.010 5	4.716 8	4.264 4	3.793 6	3.297 0	2.980 9	2.759 5	2.465 7	2.276 5	2.142 7	2.000 6	1.846 8	1.620 7	1.434 2	1.271 7	3,000
4,000	24.002 8	13.863 3	10.259 6	8.377 0	7.207 2	6.403 8	5.814 6	5.362 2	5.002 6	4.709 1	4.257 1	3.786 8	3.290 5	2.974 6	2.753 3	2.459 6	2.270 4	2.136 6	1.994 4	1.840 4	1.613 7	1.426 0	1.261 0	4,000
5,000	23.987 9	13.853 8	10.252 0	8.370 4	7.201 3	6.398 3	5.809 4	5.357 2	4.997 9	4.704 6	4.252 8	3.782 6	3.286 6	2.970 9	2.749 6	2.455 9	2.266 7	2.132 9	1.990 7	1.836 6	1.609 5	1.421 1	1.254 4	5,000
7,500	23.967 9	13.841 0	10.241 9	8.361 7	7.193 4	6.391 0	5.802 6	5.350 7	4.991 6	4.698 5	4.247 0	3.777 2	3.281 4	2.965 8	2.744 7	2.451 0	2.261 9	2.128 0	1.985 7	1.831 5	1.603 9	1.414 5	1.245 5	7,500
10,000	23.958 0	13.834 6	10.236 8	8.357 3	7.189 5	6.387 3	5.799 1	5.347 4	4.988 4	4.695 4	4.244 1	3.774 4	3.278 8	2.963 3	2.742 2	2.448 6	2.259 4	2.125 6	1.983 3	1.828 9	1.601 1	1.411 2	1.241 0	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} .999 999

F_{ν_1,ν_2} .999 999

2017-02-20 University of Waterloo STAT 221 – W.H. Cherry #13.82