

## A.5: Table of critical values of F-distribution



Figure A.5. 1.

$\alpha(1)$	0.25	0.100	0.05	0.025	0.01	0.005	0.0025	0.001
$\alpha(2)$	0.5	0.200	0.1	0.05	0.02	0.01	0.005	0.002
Df=1,Df=1	5.828427	39.863	161.447639	647.789011	4052.180695	16210.72272	64844.89087	405284.0679
2	2.571	8.526	18.512821	38.506329	98.502513	198.501253	398.50063	998.50025
3	2.024	5.538	10.127964	17.443443	34.116222	55.551957	89.58433	167.02922
4	1.807	4.545	7.708647	12.217863	21.19769	31.332772	45.67398	74.13729
5	1.692	4.060	6.607891	10.006982	16.258177	22.784781	31.40667	47.18078
6	1.621	3.776	5.987378	8.813101	13.745023	18.634996	24.80731	35.50749
7	1.573	3.589	5.591448	8.072669	12.246383	16.235558	21.1107	29.24519
8	1.538	3.458	5.317655	7.570882	11.258624	14.688199	18.77965	25.41476
9	1.512	3.360	5.117355	7.209283	10.561431	13.613609	17.18757	22.85713
10	1.491	3.285	4.964603	6.936728	10.044289	12.82647	16.03626	21.0396
11	1.475	3.225	4.844336	6.72413	9.646034	12.226311	15.16738	19.68679
12	1.461	3.177	4.747225	6.553769	9.330212	11.75423	14.48958	18.64332
13	1.450	3.136	4.667193	6.414254	9.073806	11.37354	13.94676	17.81542
14	1.440	3.102213	4.60011	6.297939	8.861593	11.060253	13.50264	17.14336
15	1.432	3.073186	4.543077	6.199501	8.683117	10.798049	13.13278	16.58742
20	1.404	2.974653	4.351244	5.871494	8.095958	9.943935	11.94005	14.81878
30	1.376	2.880695	4.170877	5.567535	7.562476	9.179677	10.8893	13.29301

### Numerator Df = 2

$\alpha(1)$	0.25	0.100	0.05	0.025	0.01	0.005	0.0025	0.001
$\alpha(2)$	0.5	0.200	0.1	0.05	0.02	0.01	0.005	0.002
Df=2,Df=1	7.500	49.500	199.500	799.500	4999.500	19999.500	79999.500	499999.500
2	3.000	9.000	19.000	39.000	99.000	199.000	399.000	999.000
3	2.280	5.462	9.552	16.044	30.817	49.799	79.933	148.500

$\alpha(1)$	0.25	0.100	0.05	0.025	0.01	0.005	0.0025	0.001
$\alpha(2)$	0.5	0.200	0.1	0.05	0.02	0.01	0.005	0.002
4	2.000	4.325	6.944	10.649	18.000	26.284	38.000	61.246
5	1.853	3.780	5.786	8.434	13.274	18.314	24.964	37.122
6	1.762	3.463	5.143	7.260	10.925	14.544	19.104	27.000
7	1.701	3.257	4.737	6.542	9.547	12.404	15.887	21.689
8	1.657	3.113	4.459	6.059	8.649	11.042	13.889	18.494
9	1.624	3.006	4.256	5.715	8.022	10.107	12.539	16.387
10	1.598	2.924	4.103	5.456	7.559	9.427	11.572	14.905
11	1.577	2.860	3.982	5.256	7.206	8.912	10.848	13.812
12	1.560	2.807	3.885	5.096	6.927	8.510	10.287	12.974
13	1.545	2.763	3.806	4.965	6.701	8.186	9.839	12.313
14	1.533	2.726	3.739	4.857	6.515	7.922	9.475	11.779
15	1.523	2.695	3.682	4.765	6.359	7.701	9.173	11.339
20	1.487	2.589	3.493	4.461	5.849	6.986	8.206	9.953
30	1.452	2.489	3.316	4.182	5.390	6.355	7.365	8.773

#### Numerator Df = 3

$\alpha(1)$	0.25	0.100	0.05	0.025	0.01	0.005	0.0025	0.001
$\alpha(2)$	0.5	0.200	0.1	0.05	0.02	0.01	0.005	0.002
Df=3,Df=1	8.200	53.593	215.707	864.163	5403.352	21614.741	86460.299	540379.200
2	3.153	9.162	19.164	39.165	99.166	199.166	399.167	999.167
3	2.356	5.391	9.277	15.439	29.457	47.467	76.056	141.109
4	2.047	4.191	6.591	9.979	16.694	24.259	34.956	56.177
5	1.884	3.619	5.409	7.764	12.060	16.530	22.426	33.202
6	1.784	3.289	4.757	6.599	9.780	12.917	16.867	23.703
7	1.717	3.074	4.347	5.890	8.451	10.882	13.843	18.772
8	1.668	2.924	4.066	5.416	7.591	9.596	11.979	15.829
9	1.632	2.813	3.863	5.078	6.992	8.717	10.726	13.902
10	1.603	2.728	3.708	4.826	6.552	8.081	9.833	12.553
11	1.580	2.660	3.587	4.630	6.217	7.600	9.167	11.561
12	1.561	2.606	3.490	4.474	5.953	7.226	8.652	10.804
13	1.545	2.560	3.411	4.347	5.739	6.926	8.242	10.209
14	1.532	2.522	3.344	4.242	5.564	6.680	7.910	9.729
15	1.520	2.490	3.287	4.153	5.417	6.476	7.634	9.335
20	1.481	2.380	3.098	3.859	4.938	5.818	6.757	8.098
30	1.443	2.276	2.922	3.589	4.510	5.239	5.999	7.054

#### Numerator Df = 4

$\alpha(1)$	0.25	0.100	0.05	0.025	0.01	0.005	0.0025	0.001
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$\alpha(2)$	0.025	0.100	0.05	0.025	0.02	0.005	0.0025	0.002
Df=4,Df=1	8.581	55.833	224.583	899.583	5624.583	22499.583	89999.583	562499.600
$\alpha(2)$	3.232	0.249	19.247	39.246	99.243	199.239	399.235	999.230
3	2.390	5.343	9.117	15.101	28.710	46.195	73.948	137.100
4	2.064	4.107	6.388	9.605	15.977	23.155	33.303	53.436
5	1.893	3.520	5.192	7.388	11.392	15.556	21.048	31.085
6	1.787	3.181	4.534	6.227	9.148	12.028	15.652	21.924
7	1.716	2.961	4.120	5.523	7.847	10.050	12.733	17.198
8	1.664	2.806	3.838	5.053	7.006	8.805	10.941	14.392
9	1.625	2.693	3.633	4.718	6.422	7.956	9.741	12.560
10	1.595	2.605	3.478	4.468	5.994	7.343	8.888	11.283
11	1.570	2.536	3.357	4.275	5.668	6.881	8.252	10.346
12	1.550	2.480	3.259	4.121	5.412	6.521	7.762	9.633
13	1.534	2.434	3.179	3.996	5.205	6.233	7.373	9.073
14	1.519	2.395	3.112	3.892	5.035	5.998	7.057	8.622
15	1.507	2.361	3.056	3.804	4.893	5.803	6.796	8.253
20	1.465	2.249	2.866	3.515	4.431	5.174	5.967	7.096
30	1.424	2.142	2.690	3.250	4.018	4.623	5.253	6.125

#### Numerator Df = 5

$\alpha(1)$	0.25	0.100	0.05	0.025	0.01	0.005	0.0025	0.001
$\alpha(2)$	0.5	0.200	0.1	0.05	0.02	0.01	0.005	0.002
Df=5,Df=1	8.820	57.240	230.162	921.848	5763.650	23055.798	92224.393	576404.600
2	3.280	9.293	19.296	39.298	99.299	199.300	399.300	999.300
3	2.409	5.309	9.013	14.885	28.237	45.392	72.621	134.580
4	2.072	4.051	6.256	9.364	15.522	22.456	32.261	51.712
5	1.895	3.453	5.050	7.146	10.967	14.940	20.178	29.752
6	1.785	3.108	4.387	5.988	8.746	11.464	14.884	20.803
7	1.711	2.883	3.972	5.285	7.460	9.522	12.031	16.206
8	1.658	2.726	3.687	4.817	6.632	8.302	10.283	13.485
9	1.617	2.611	3.482	4.484	6.057	7.471	9.116	11.714
10	1.585	2.522	3.326	4.236	5.636	6.872	8.288	10.481
11	1.560	2.451	3.204	4.044	5.316	6.422	7.671	9.578
12	1.539	2.394	3.106	3.891	5.064	6.071	7.196	8.892
13	1.521	2.347	3.025	3.767	4.862	5.791	6.820	8.354
14	1.507	2.307	2.958	3.663	4.695	5.562	6.515	7.922
15	1.494	2.273	2.901	3.576	4.556	5.372	6.263	7.567
20	1.450	2.158	2.711	3.289	4.103	4.762	5.463	6.461
30	1.407	2.049	2.534	3.026	3.699	4.228	4.776	5.534

R code used was

```
qf(c(alpha), df1=dfn, df2=dfd, lower.tail=FALSE)
```

Where `dfn` refers to numerator degrees of freedom and `dfd` refers to denominator degrees of freedom.

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