The Normal Distribution

47.725% of the Distribution (0.47725)

-2.0   0   z
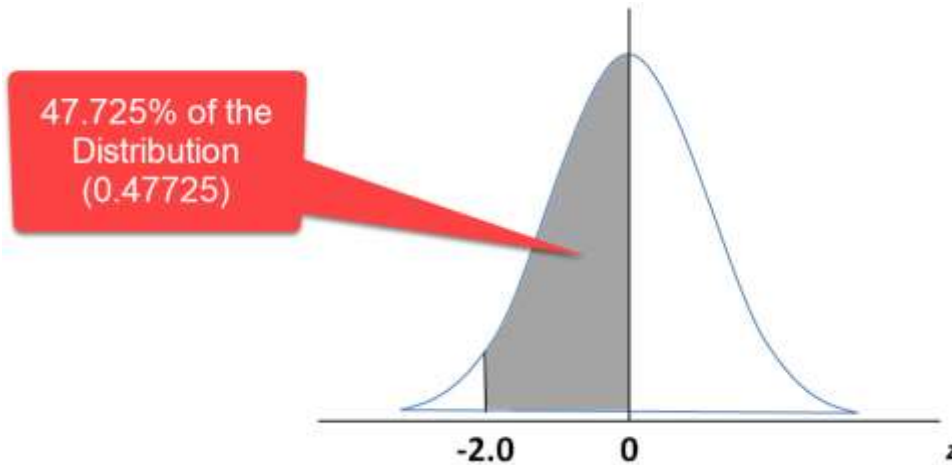
Area under the Normal Curve from 0 to X

X	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.0	0.00000	0.00399	0.00798	0.01197	0.01595	0.01994	0.02392	0.02790	0.03188	0.03586
0.1	0.03983	0.04380	0.04776	0.05172	0.05567	0.05962	0.06356	0.06749	0.07142	0.07535
0.2	0.07926	0.08317	0.08706	0.09095	0.09483	0.09871	0.10257	0.10642	0.11026	0.11409
0.3	0.11791	0.12172	0.12552	0.12930	0.13307	0.13683	0.14058	0.14431	0.14803	0.15173
0.4	0.15542	0.15910	0.16276	0.16640	0.17003	0.17364	0.17724	0.18082	0.18439	0.18793
0.5	0.19146	0.19497	0.19847	0.20194	0.20540	0.20884	0.21226	0.21566	0.21904	0.22240
0.6	0.22575	0.22907	0.23237	0.23565	0.23891	0.24215	0.24537	0.24857	0.25175	0.25490
0.7	0.25804	0.26115	0.26424	0.26730	0.27035	0.27337	0.27637	0.27935	0.28230	0.28524
0.8	0.28814	0.29103	0.29389	0.29673	0.29955	0.30234	0.30511	0.30785	0.31057	0.31327
0.9	0.31594	0.31859	0.32121	0.32381	0.32639	0.32894	0.33147	0.33398	0.33646	0.33891
1.0	0.34134	0.34375	0.34614	0.34849	0.35083	0.35314	0.35543	0.35769	0.35993	0.36214
1.1	0.36433	0.36650	0.36864	0.37076	0.37286	0.37493	0.37698	0.37900	0.38100	0.38298
1.2	0.38493	0.38686	0.38877	0.39065	0.39251	0.39435	0.39617	0.39796	0.39973	0.40147
1.3	0.40320	0.40490	0.40658	0.40824	0.40988	0.41149	0.41309	0.41466	0.41621	0.41774
1.4	0.41924	0.42073	0.42220	0.42364	0.42507	0.42647	0.42785	0.42922	0.43056	0.43189
1.5	0.43319	0.43448	0.43574	0.43699	0.43822	0.43943	0.44062	0.44179	0.44295	0.44408
1.6	0.44520	0.44630	0.44738	0.44845	0.44950	0.45053	0.45154	0.45254	0.45352	0.45449
1.7	0.45543	0.45637	0.45728	0.45818	0.45907	0.45994	0.46080	0.46164	0.46246	0.46327
1.8	0.46407	0.46485	0.46562	0.46638	0.46712	0.46784	0.46856	0.46926	0.46995	0.47062
1.9	0.47128	0.47193	0.47257	0.47320	0.47381	0.47441	0.47500	0.47558	0.47615	0.47670
2.0	0.47725	0.47778	0.47831	0.47882	0.47932	0.47982	0.48030	0.48077	0.48124	0.48169
2.1	0.48214	0.48257	0.48300	0.48341	0.48382	0.48422	0.48461	0.48500	0.48537	0.48574
2.2	0.48610	0.48645	0.48679	0.48713	0.48745	0.48778	0.48809	0.48840	0.48870	0.48899
2.3	0.48928	0.48956	0.48983	0.49010	0.49036	0.49061	0.49086	0.49111	0.49134	0.49158
2.4	0.49180	0.49202	0.49224	0.49245	0.49266	0.49286	0.49305	0.49324	0.49343	0.49361
2.5	0.49379	0.49396	0.49413	0.49430	0.49446	0.49461	0.49477	0.49492	0.49506	0.49520
2.6	0.49534	0.49547	0.49560	0.49573	0.49585	0.49598	0.49609	0.49621	0.49632	0.49643
2.7	0.49653	0.49664	0.49674	0.49683	0.49693	0.49702	0.49711	0.49720	0.49728	0.49736
2.8	0.49744	0.49752	0.49760	0.49767	0.49774	0.49781	0.49788	0.49795	0.49801	0.49807
2.9	0.49813	0.49819	0.49825	0.49831	0.49836	0.49841	0.49846	0.49851	0.49856	0.49861
3.0	0.49865	0.49869	0.49874	0.49878	0.49882	0.49886	0.49889	0.49893	0.49896	0.49900

# The Student T Distribution Critical Values

Student T Distribution
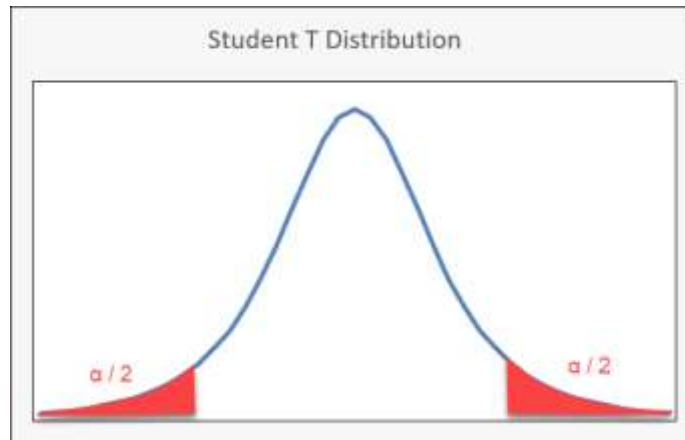
Student T's Distribution Critical Values

df (v)	0.10	0.05	0.025	0.01	0.005	0.001
1	3.078	6.314	12.706	31.821	63.657	318.309
2	1.886	2.920	4.303	6.965	9.925	22.327
3	1.638	2.353	3.182	4.541	5.841	10.215
4	1.533	2.132	2.776	3.747	4.604	7.173
5	1.476	2.015	2.571	3.365	4.032	5.893
6	1.440	1.943	2.447	3.143	3.707	5.208
7	1.415	1.895	2.365	2.998	3.499	4.785
8	1.397	1.860	2.306	2.896	3.355	4.501
9	1.383	1.833	2.262	2.821	3.250	4.297
10	1.372	1.812	2.228	2.764	3.169	4.144
11	1.363	1.796	2.201	2.718	3.106	4.025
12	1.356	1.782	2.179	2.681	3.055	3.930
13	1.350	1.771	2.160	2.650	3.012	3.852
14	1.345	1.761	2.145	2.624	2.977	3.787
15	1.341	1.753	2.131	2.602	2.947	3.733
16	1.337	1.746	2.120	2.583	2.921	3.686
17	1.333	1.740	2.110	2.567	2.898	3.646
18	1.330	1.734	2.101	2.552	2.878	3.610
19	1.328	1.729	2.093	2.539	2.861	3.579
20	1.325	1.725	2.086	2.528	2.845	3.552
21	1.323	1.721	2.080	2.518	2.831	3.527
22	1.321	1.717	2.074	2.508	2.819	3.505
23	1.319	1.714	2.069	2.500	2.807	3.485
24	1.318	1.711	2.064	2.492	2.797	3.467
25	1.316	1.708	2.060	2.485	2.787	3.450
26	1.315	1.706	2.056	2.479	2.779	3.435
27	1.314	1.703	2.052	2.473	2.771	3.421
28	1.313	1.701	2.048	2.467	2.763	3.408
29	1.311	1.699	2.045	2.462	2.756	3.396
30	1.310	1.697	2.042	2.457	2.750	3.385

The Chi-Squared Distribution, Left-Tail

Chi-Squared Distribution

X^2_{α}
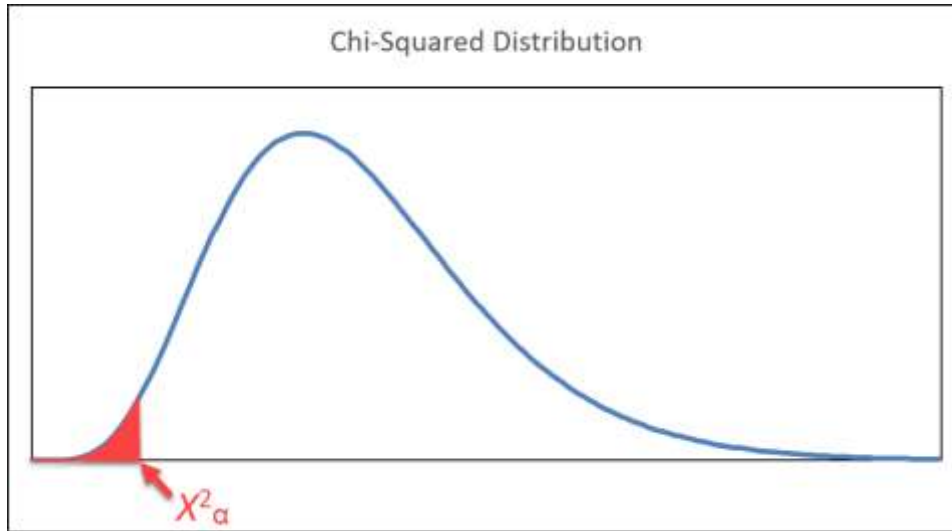
Left-Tail Critical Value of the Chi-Squared (X^2) Distribution

df (v)	0.001	0.005	0.010	0.025	0.050	0.100
1	0.000	0.000	0.000	0.001	0.004	0.016
2	0.002	0.010	0.020	0.051	0.103	0.211
3	0.024	0.072	0.115	0.216	0.352	0.584
4	0.091	0.207	0.297	0.484	0.711	1.064
5	0.210	0.412	0.554	0.831	1.145	1.610
6	0.381	0.676	0.872	1.237	1.635	2.204
7	0.598	0.989	1.239	1.690	2.167	2.833
8	0.857	1.344	1.646	2.180	2.733	3.490
9	1.152	1.735	2.088	2.700	3.325	4.168
10	1.479	2.156	2.558	3.247	3.940	4.865
11	1.834	2.603	3.053	3.816	4.575	5.578
12	2.214	3.074	3.571	4.404	5.226	6.304
13	2.617	3.565	4.107	5.009	5.892	7.042
14	3.041	4.075	4.660	5.629	6.571	7.790
15	3.483	4.601	5.229	6.262	7.261	8.547
16	3.942	5.142	5.812	6.908	7.962	9.312
17	4.416	5.697	6.408	7.564	8.672	10.085
18	4.905	6.265	7.015	8.231	9.390	10.865
19	5.407	6.844	7.633	8.907	10.117	11.651
20	5.921	7.434	8.260	9.591	10.851	12.443
21	6.447	8.034	8.897	10.283	11.591	13.240
22	6.983	8.643	9.542	10.982	12.338	14.041
23	7.529	9.260	10.196	11.689	13.091	14.848
24	8.085	9.886	10.856	12.401	13.848	15.659
25	8.649	10.520	11.524	13.120	14.611	16.473
26	9.222	11.160	12.198	13.844	15.379	17.292
27	9.803	11.808	12.879	14.573	16.151	18.114
28	10.391	12.461	13.565	15.308	16.928	18.939
29	10.986	13.121	14.256	16.047	17.708	19.768
30	11.588	13.787	14.953	16.791	18.493	20.599

The Chi-Squared Distribution, Right-Tail

Chi-Squared Distribution

$X^2_{1-\alpha}$
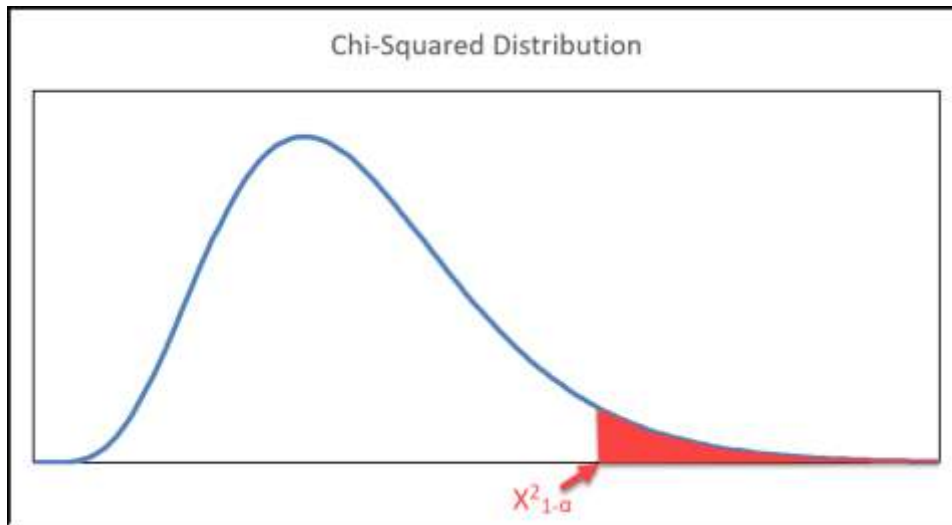
Right-Tail Critical Value of the Chi-Squared (X^2) Distribution

df (v)	0.900	0.950	0.975	0.990	0.995	0.999
1	2.706	3.841	5.024	6.635	7.879	10.828
2	4.605	5.991	7.378	9.210	10.597	13.816
3	6.251	7.815	9.348	11.345	12.838	16.266
4	7.779	9.488	11.143	13.277	14.860	18.467
5	9.236	11.070	12.833	15.086	16.750	20.515
6	10.645	12.592	14.449	16.812	18.548	22.458
7	12.017	14.067	16.013	18.475	20.278	24.322
8	13.362	15.507	17.535	20.090	21.955	26.124
9	14.684	16.919	19.023	21.666	23.589	27.877
10	15.987	18.307	20.483	23.209	25.188	29.588
11	17.275	19.675	21.920	24.725	26.757	31.264
12	18.549	21.026	23.337	26.217	28.300	32.909
13	19.812	22.362	24.736	27.688	29.819	34.528
14	21.064	23.685	26.119	29.141	31.319	36.123
15	22.307	24.996	27.488	30.578	32.801	37.697
16	23.542	26.296	28.845	32.000	34.267	39.252
17	24.769	27.587	30.191	33.409	35.718	40.790
18	25.989	28.869	31.526	34.805	37.156	42.312
19	27.204	30.144	32.852	36.191	38.582	43.820
20	28.412	31.410	34.170	37.566	39.997	45.315
21	29.615	32.671	35.479	38.932	41.401	46.797
22	30.813	33.924	36.781	40.289	42.796	48.268
23	32.007	35.172	38.076	41.638	44.181	49.728
24	33.196	36.415	39.364	42.980	45.559	51.179
25	34.382	37.652	40.646	44.314	46.928	52.620
26	35.563	38.885	41.923	45.642	48.290	54.052
27	36.741	40.113	43.195	46.963	49.645	55.476
28	37.916	41.337	44.461	48.278	50.993	56.892
29	39.087	42.557	45.722	49.588	52.336	58.301
30	40.256	43.773	46.979	50.892	53.672	59.703

The F Distribution Critical Values

F Distribution ($v_1 = 10$, $v_2 = 10$)
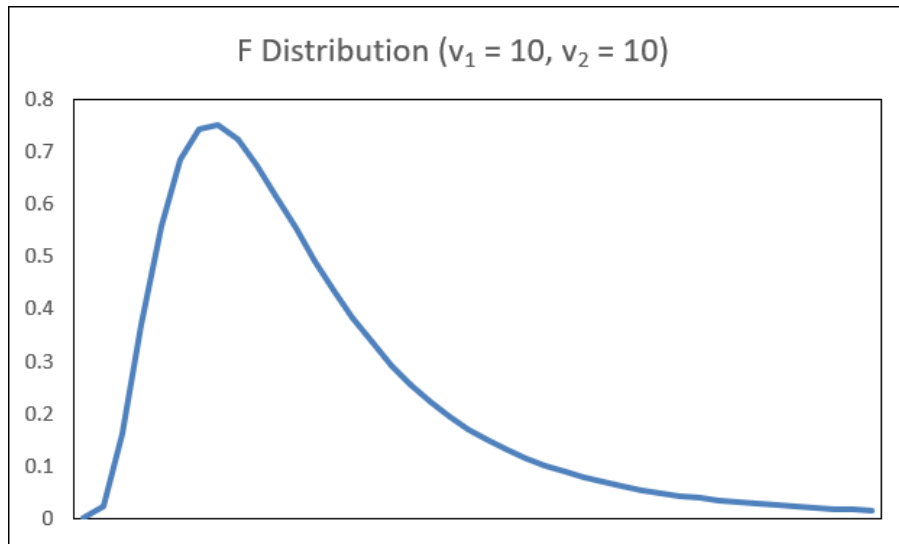
Upper Critical Values of the F Distribution at 5% Significance Level

		Numerator Degrees of Freedom (v_1)								
		1	2	3	4	5	6	7	8	9	10
Denominator Degrees of Freedom (v_2)	1	161.448	199.500	215.707	224.583	230.162	233.986	236.768	238.883	240.543	241.882
	2	18.513	19.000	19.164	19.247	19.296	19.330	19.353	19.371	19.385	19.396
	3	10.128	9.552	9.277	9.117	9.013	8.941	8.887	8.845	8.812	8.786
	4	7.709	6.944	6.591	6.388	6.256	6.163	6.094	6.041	5.999	5.964
	5	6.608	5.786	5.409	5.192	5.050	4.950	4.876	4.818	4.772	4.735
	6	5.987	5.143	4.757	4.534	4.387	4.284	4.207	4.147	4.099	4.060
	7	5.591	4.737	4.347	4.120	3.972	3.866	3.787	3.726	3.677	3.637
	8	5.318	4.459	4.066	3.838	3.687	3.581	3.500	3.438	3.388	3.347
	9	5.117	4.256	3.863	3.633	3.482	3.374	3.293	3.230	3.179	3.137
	10	4.965	4.103	3.708	3.478	3.326	3.217	3.135	3.072	3.020	2.978

Upper Critical Values of the F Distribution at 10% Significance Level

		Numerator Degrees of Freedom (v_1)								
		1	2	3	4	5	6	7	8	9	10
Denominator Degrees of Freedom (v_2)	1	39.863	49.500	53.593	55.833	57.240	58.204	58.906	59.439	59.858	60.195
	2	8.526	9.000	9.162	9.243	9.293	9.326	9.349	9.367	9.381	9.392
	3	5.538	5.462	5.391	5.343	5.309	5.285	5.266	5.252	5.240	5.230
	4	4.545	4.325	4.191	4.107	4.051	4.010	3.979	3.955	3.936	3.920
	5	4.060	3.780	3.619	3.520	3.453	3.405	3.368	3.339	3.316	3.297
	6	3.776	3.463	3.289	3.181	3.108	3.055	3.014	2.983	2.958	2.937
	7	3.589	3.257	3.074	2.961	2.883	2.827	2.785	2.752	2.725	2.703
	8	3.458	3.113	2.924	2.806	2.726	2.668	2.624	2.589	2.561	2.538
	9	3.360	3.006	2.813	2.693	2.611	2.551	2.505	2.469	2.440	2.416
	10	3.285	2.924	2.728	2.605	2.522	2.461	2.414	2.377	2.347	2.323