

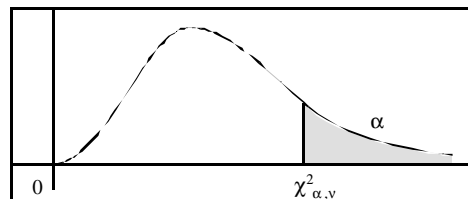
Universidad de Sevilla

Escuela Universitaria Politécnica

Departamento de Matemática Aplicada II

15	20	24	30	40	60	120	∞
9.49	9.58	9.63	9.67	9.71	9.76	9.80	9.85
3.41	3.43	3.43	3.44	3.45	3.46	3.47	3.48
2.46	2.46	2.46	2.47	2.47	2.47	2.47	2.47
2.08	2.08	2.08	2.08	2.08	2.08	2.08	2.08
1.89	1.88	1.88	1.88	1.88	1.87	1.87	1.87
1.76	1.76	1.75	1.75	1.75	1.74	1.74	1.74
1.68	1.67	1.67	1.66	1.66	1.65	1.65	1.65
1.62	1.61	1.60	1.60	1.59	1.59	1.58	1.58

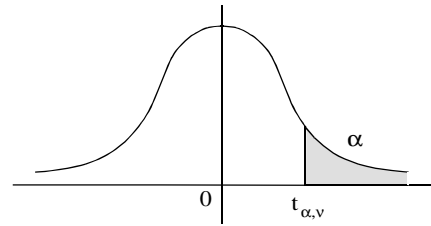
Asignatura Métodos Estadísticos de la Ingeniería



$$(\bar{x}_1 - \bar{x}_2) - t_{\alpha/2, u} \sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}} < m_1 - m_2 < (\bar{x}_1 - \bar{x}_2) + t_{\alpha/2, u} \sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}$$

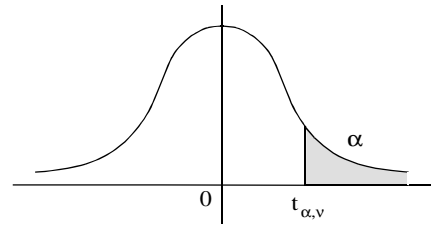
Formulario y tablas estadísticas

Valores críticos $t_{\alpha, v}$ de la distribución t de Student



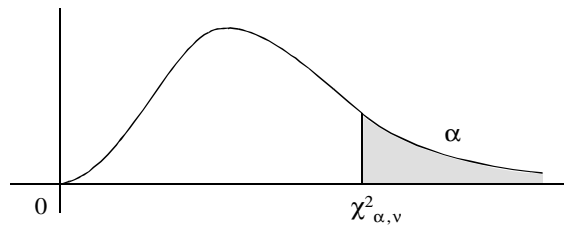
		Área de la cola (α)							
		0.4500	0.4000	0.3500	0.3000	0.2500	0.2000	0.1500	0.1000
Número de grados de libertad (v)	1	0.1584	0.3249	0.5095	0.7265	1.0000	1.3764	1.9626	3.0777
	2	0.1421	0.2887	0.4447	0.6172	0.8165	1.0607	1.3862	1.8856
	3	0.1366	0.2767	0.4242	0.5844	0.7649	0.9785	1.2498	1.6377
	4	0.1338	0.2707	0.4142	0.5686	0.7407	0.9410	1.1896	1.5332
	5	0.1322	0.2672	0.4082	0.5594	0.7267	0.9195	1.1558	1.4759
	6	0.1311	0.2648	0.4043	0.5534	0.7176	0.9057	1.1342	1.4398
	7	0.1303	0.2632	0.4015	0.5491	0.7111	0.8960	1.1192	1.4149
	8	0.1297	0.2619	0.3995	0.5459	0.7064	0.8889	1.1081	1.3968
	9	0.1293	0.2610	0.3979	0.5435	0.7027	0.8834	1.0997	1.3830
	10	0.1289	0.2602	0.3966	0.5415	0.6998	0.8791	1.0931	1.3722
	11	0.1286	0.2596	0.3956	0.5399	0.6974	0.8755	1.0877	1.3634
	12	0.1283	0.2590	0.3947	0.5386	0.6955	0.8726	1.0832	1.3562
	13	0.1281	0.2586	0.3940	0.5375	0.6938	0.8702	1.0795	1.3502
	14	0.1280	0.2582	0.3933	0.5366	0.6924	0.8681	1.0763	1.3450
	15	0.1278	0.2579	0.3928	0.5357	0.6912	0.8662	1.0735	1.3406
	16	0.1277	0.2576	0.3923	0.5350	0.6901	0.8647	1.0711	1.3368
	17	0.1276	0.2573	0.3919	0.5344	0.6892	0.8633	1.0690	1.3334
	18	0.1274	0.2571	0.3915	0.5338	0.6884	0.8620	1.0672	1.3304
	19	0.1274	0.2569	0.3912	0.5333	0.6876	0.8610	1.0655	1.3277
	20	0.1273	0.2567	0.3909	0.5329	0.6870	0.8600	1.0640	1.3253
	21	0.1272	0.2566	0.3906	0.5325	0.6864	0.8591	1.0627	1.3232
	22	0.1271	0.2564	0.3904	0.5321	0.6858	0.8583	1.0614	1.3212
	23	0.1271	0.2563	0.3902	0.5317	0.6853	0.8575	1.0603	1.3195
	24	0.1270	0.2562	0.3900	0.5314	0.6848	0.8569	1.0593	1.3178
	25	0.1269	0.2561	0.3898	0.5312	0.6844	0.8562	1.0584	1.3163
	26	0.1269	0.2560	0.3896	0.5309	0.6840	0.8557	1.0575	1.3150
	27	0.1268	0.2559	0.3894	0.5306	0.6837	0.8551	1.0567	1.3137
	28	0.1268	0.2558	0.3893	0.5304	0.6834	0.8546	1.0560	1.3125
	29	0.1268	0.2557	0.3892	0.5302	0.6830	0.8542	1.0553	1.3114
	30	0.1267	0.2556	0.3890	0.5300	0.6828	0.8538	1.0547	1.3104
	32	0.1267	0.2555	0.3888	0.5297	0.6822	0.8530	1.0535	1.3086
	34	0.1266	0.2553	0.3886	0.5294	0.6818	0.8523	1.0525	1.3070
36	0.1266	0.2552	0.3884	0.5291	0.6814	0.8517	1.0516	1.3055	
38	0.1265	0.2551	0.3882	0.5288	0.6810	0.8512	1.0508	1.3042	
40	0.1265	0.2550	0.3881	0.5286	0.6807	0.8507	1.0500	1.3031	
45	0.1264	0.2549	0.3878	0.5281	0.6800	0.8497	1.0485	1.3007	
50	0.1263	0.2547	0.3875	0.5278	0.6794	0.8489	1.0473	1.2987	
60	0.1262	0.2545	0.3872	0.5272	0.6786	0.8477	1.0455	1.2958	
90	0.1260	0.2541	0.3866	0.5263	0.6772	0.8456	1.0424	1.2910	
120	0.1259	0.2539	0.3862	0.5258	0.6765	0.8446	1.0409	1.2886	
∞	0.1257	0.2533	0.3853	0.5244	0.6745	0.8416	1.0364	1.2816	

Valores críticos $t_{\alpha, v}$ de la distribución t de Student



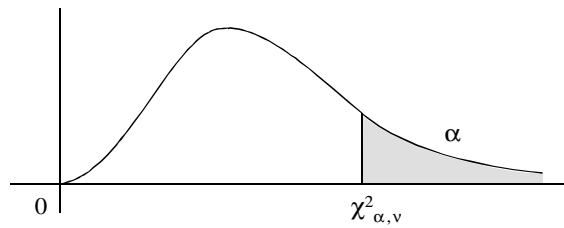
		Área de la cola (α)							
		0.0500	0.0250	0.0125	0.0100	0.0050	0.0025	0.0010	0.0005
Número de grados de libertad (v)	1	6.3137	12.7062	25.4519	31.8210	63.6559	127.3211	318.2888	636.5776
	2	2.9200	4.3027	6.2054	6.9645	9.9250	14.0892	22.3285	31.5998
	3	2.3534	3.1824	4.1765	4.5407	5.8408	7.4532	10.2143	12.9244
	4	2.1318	2.7765	3.4954	3.7469	4.6041	5.5975	7.1729	8.6101
	5	2.0150	2.5706	3.1634	3.3649	4.0321	4.7733	5.8935	6.8685
	6	1.9432	2.4469	2.9687	3.1427	3.7074	4.3168	5.2075	5.9587
	7	1.8946	2.3646	2.8412	2.9979	3.4995	4.0294	4.7853	5.4081
	8	1.8595	2.3060	2.7515	2.8965	3.3554	3.8325	4.5008	5.0414
	9	1.8331	2.2622	2.6850	2.8214	3.2498	3.6896	4.2969	4.7809
	10	1.8125	2.2281	2.6338	2.7638	3.1693	3.5814	4.1437	4.5868
	11	1.7959	2.2010	2.5931	2.7181	3.1058	3.4966	4.0248	4.4369
	12	1.7823	2.1788	2.5600	2.6810	3.0545	3.4284	3.9296	4.3178
	13	1.7709	2.1604	2.5326	2.6503	3.0123	3.3725	3.8520	4.2209
	14	1.7613	2.1448	2.5096	2.6245	2.9768	3.3257	3.7874	4.1403
	15	1.7531	2.1315	2.4899	2.6025	2.9467	3.2860	3.7329	4.0728
	16	1.7459	2.1199	2.4729	2.5835	2.9208	3.2520	3.6861	4.0149
	17	1.7396	2.1098	2.4581	2.5669	2.8982	3.2224	3.6458	3.9651
	18	1.7341	2.1009	2.4450	2.5524	2.8784	3.1966	3.6105	3.9217
	19	1.7291	2.0930	2.4334	2.5395	2.8609	3.1737	3.5793	3.8833
	20	1.7247	2.0860	2.4231	2.5280	2.8453	3.1534	3.5518	3.8496
	21	1.7207	2.0796	2.4138	2.5176	2.8314	3.1352	3.5271	3.8193
	22	1.7171	2.0739	2.4055	2.5083	2.8188	3.1188	3.5050	3.7922
	23	1.7139	2.0687	2.3979	2.4999	2.8073	3.1040	3.4850	3.7676
	24	1.7109	2.0639	2.3910	2.4922	2.7970	3.0905	3.4668	3.7454
	25	1.7081	2.0595	2.3846	2.4851	2.7874	3.0782	3.4502	3.7251
	26	1.7056	2.0555	2.3788	2.4786	2.7787	3.0669	3.4350	3.7067
	27	1.7033	2.0518	2.3734	2.4727	2.7707	3.0565	3.4210	3.6895
	28	1.7011	2.0484	2.3685	2.4671	2.7633	3.0470	3.4082	3.6739
	29	1.6991	2.0452	2.3638	2.4620	2.7564	3.0380	3.3963	3.6595
	30	1.6973	2.0423	2.3596	2.4573	2.7500	3.0298	3.3852	3.6460
32	1.6939	2.0369	2.3518	2.4487	2.7385	3.0149	3.3653	3.6218	
34	1.6909	2.0322	2.3451	2.4411	2.7284	3.0020	3.3480	3.6007	
36	1.6883	2.0281	2.3391	2.4345	2.7195	2.9905	3.3326	3.5821	
38	1.6860	2.0244	2.3337	2.4286	2.7116	2.9803	3.3190	3.5657	
40	1.6839	2.0211	2.3289	2.4233	2.7045	2.9712	3.3069	3.5510	
45	1.6794	2.0141	2.3189	2.4121	2.6896	2.9521	3.2815	3.5203	
50	1.6759	2.0086	2.3109	2.4033	2.6778	2.9370	3.2614	3.4960	
60	1.6706	2.0003	2.2990	2.3901	2.6603	2.9146	3.2317	3.4602	
90	1.6620	1.9867	2.2795	2.3685	2.6316	2.8779	3.1832	3.4019	
120	1.6576	1.9799	2.2699	2.3578	2.6174	2.8599	3.1595	3.3734	
∞	1.6449	1.9600	2.2414	2.3264	2.5758	2.8070	3.0902	3.2905	

Valores críticos $\chi^2_{\alpha, \nu}$
de la distribución ji-cuadrado



		Área de la cola (α)							
		0.995	0.990	0.975	0.950	0.900	0.800	0.700	0.500
Número de grados de libertad (ν)	1	0.00	0.00	0.00	0.00	0.02	0.06	0.15	0.45
	2	0.01	0.02	0.05	0.10	0.21	0.45	0.71	1.39
	3	0.07	0.11	0.22	0.35	0.58	1.01	1.42	2.37
	4	0.21	0.30	0.48	0.71	1.06	1.65	2.19	3.36
	5	0.41	0.55	0.83	1.15	1.61	2.34	3.00	4.35
	6	0.68	0.87	1.24	1.64	2.20	3.07	3.83	5.35
	7	0.99	1.24	1.69	2.17	2.83	3.82	4.67	6.35
	8	1.34	1.65	2.18	2.73	3.49	4.59	5.53	7.34
	9	1.73	2.09	2.70	3.33	4.17	5.38	6.39	8.34
	10	2.16	2.56	3.25	3.94	4.87	6.18	7.27	9.34
	11	2.60	3.05	3.82	4.57	5.58	6.99	8.15	10.34
	12	3.07	3.57	4.40	5.23	6.30	7.81	9.03	11.34
	13	3.57	4.11	5.01	5.89	7.04	8.63	9.93	12.34
	14	4.07	4.66	5.63	6.57	7.79	9.47	10.82	13.34
	15	4.60	5.23	6.26	7.26	8.55	10.31	11.72	14.34
	16	5.14	5.81	6.91	7.96	9.31	11.15	12.62	15.34
	17	5.70	6.41	7.56	8.67	10.09	12.00	13.53	16.34
	18	6.26	7.01	8.23	9.39	10.86	12.86	14.44	17.34
	19	6.84	7.63	8.91	10.12	11.65	13.72	15.35	18.34
	20	7.43	8.26	9.59	10.85	12.44	14.58	16.27	19.34
	21	8.03	8.90	10.28	11.59	13.24	15.44	17.18	20.34
	22	8.64	9.54	10.98	12.34	14.04	16.31	18.10	21.34
	23	9.26	10.20	11.69	13.09	14.85	17.19	19.02	22.34
	24	9.89	10.86	12.40	13.85	15.66	18.06	19.94	23.34
	25	10.52	11.52	13.12	14.61	16.47	18.94	20.87	24.34
	26	11.16	12.20	13.84	15.38	17.29	19.82	21.79	25.34
	27	11.81	12.88	14.57	16.15	18.11	20.70	22.72	26.34
	28	12.46	13.56	15.31	16.93	18.94	21.59	23.65	27.34
	29	13.12	14.26	16.05	17.71	19.77	22.48	24.58	28.34
	30	13.79	14.95	16.79	18.49	20.60	23.36	25.51	29.34
40	20.71	22.16	24.43	26.51	29.05	32.34	34.87	39.34	
50	27.99	29.71	32.36	34.76	37.69	41.45	44.31	49.33	
60	35.53	37.48	40.48	43.19	46.46	50.64	53.81	59.33	
70	43.28	45.44	48.76	51.74	55.33	59.90	63.35	69.33	
80	51.17	53.54	57.15	60.39	64.28	69.21	72.92	79.33	
90	59.20	61.75	65.65	69.13	73.29	78.56	82.51	89.33	
100	67.33	70.06	74.22	77.93	82.36	87.95	92.13	99.33	

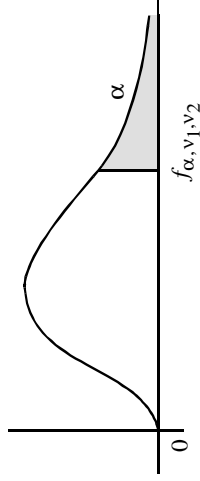
Valores críticos $\chi^2_{\alpha, \nu}$
de la distribución ji-cuadrado



		Área de la cola (α)							
		0.300	0.200	0.100	0.050	0.025	0.010	0.005	0.001
Número de grados de libertad (ν)	1	1.07	1.64	2.71	3.84	5.02	6.63	7.88	10.83
	2	2.41	3.22	4.61	5.99	7.38	9.21	10.60	13.82
	3	3.66	4.64	6.25	7.81	9.35	11.34	12.84	16.27
	4	4.88	5.99	7.78	9.49	11.14	13.28	14.86	18.47
	5	6.06	7.29	9.24	11.07	12.83	15.09	16.75	20.51
	6	7.23	8.56	10.64	12.59	14.45	16.81	18.55	22.46
	7	8.38	9.80	12.02	14.07	16.01	18.48	20.28	24.32
	8	9.52	11.03	13.36	15.51	17.53	20.09	21.95	26.12
	9	10.66	12.24	14.68	16.92	19.02	21.67	23.59	27.88
	10	11.78	13.44	15.99	18.31	20.48	23.21	25.19	29.59
	11	12.90	14.63	17.28	19.68	21.92	24.73	26.76	31.26
	12	14.01	15.81	18.55	21.03	23.34	26.22	28.30	32.91
	13	15.12	16.98	19.81	22.36	24.74	27.69	29.82	34.53
	14	16.22	18.15	21.06	23.68	26.12	29.14	31.32	36.12
	15	17.32	19.31	22.31	25.00	27.49	30.58	32.80	37.70
	16	18.42	20.47	23.54	26.30	28.85	32.00	34.27	39.25
	17	19.51	21.61	24.77	27.59	30.19	33.41	35.72	40.79
	18	20.60	22.76	25.99	28.87	31.53	34.81	37.16	42.31
	19	21.69	23.90	27.20	30.14	32.85	36.19	38.58	43.82
	20	22.77	25.04	28.41	31.41	34.17	37.57	40.00	45.31
	21	23.86	26.17	29.62	32.67	35.48	38.93	41.40	46.80
	22	24.94	27.30	30.81	33.92	36.78	40.29	42.80	48.27
	23	26.02	28.43	32.01	35.17	38.08	41.64	44.18	49.73
	24	27.10	29.55	33.20	36.42	39.36	42.98	45.56	51.18
	25	28.17	30.68	34.38	37.65	40.65	44.31	46.93	52.62
	26	29.25	31.79	35.56	38.89	41.92	45.64	48.29	54.05
	27	30.32	32.91	36.74	40.11	43.19	46.96	49.65	55.48
	28	31.39	34.03	37.92	41.34	44.46	48.28	50.99	56.89
	29	32.46	35.14	39.09	42.56	45.72	49.59	52.34	58.30
	30	33.53	36.25	40.26	43.77	46.98	50.89	53.67	59.70
40	44.16	47.27	51.81	55.76	59.34	63.69	66.77	73.40	
50	54.72	58.16	63.17	67.50	71.42	76.15	79.49	86.66	
60	65.23	68.97	74.40	79.08	83.30	88.38	91.95	99.61	
70	75.69	79.71	85.53	90.53	95.02	100.43	104.21	112.32	
80	86.12	90.41	96.58	101.88	106.63	112.33	116.32	124.84	
90	96.52	101.05	107.57	113.15	118.14	124.12	128.30	137.21	
100	106.91	111.67	118.50	124.34	129.56	135.81	140.17	149.45	

Valores críticos f_{α, v_1, v_2} de la distribución F

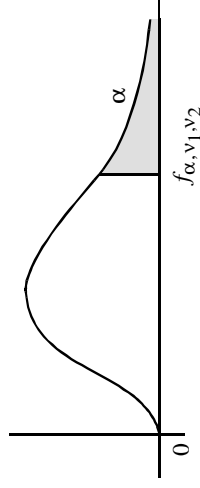
$\alpha = 0.25$



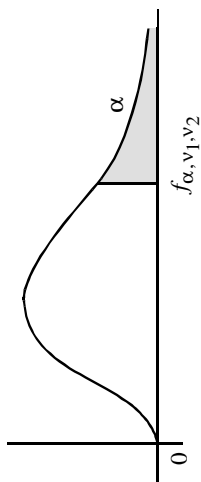
		Número de grados de libertad del numerador (v_1)																			
		1	2	3	4	5	6	7	8	9	10	12	15	20	24	30	40	60	120	∞	
Número de grados de libertad del denominador (v_2)	1	5.83	7.50	8.20	8.58	8.82	8.98	9.10	9.19	9.26	9.32	9.41	9.49	9.58	9.63	9.67	9.71	9.76	9.80	9.85	
	2	2.57	3.00	3.15	3.23	3.28	3.31	3.34	3.35	3.37	3.38	3.39	3.41	3.43	3.43	3.44	3.44	3.45	3.46	3.47	3.48
	3	2.02	2.28	2.36	2.39	2.41	2.42	2.43	2.44	2.44	2.44	2.45	2.46	2.46	2.46	2.46	2.47	2.47	2.47	2.47	2.47
	4	1.81	2.00	2.05	2.06	2.07	2.08	2.08	2.08	2.08	2.08	2.08	2.08	2.08	2.08	2.08	2.08	2.08	2.08	2.08	2.08
	5	1.69	1.85	1.88	1.89	1.89	1.89	1.89	1.89	1.89	1.89	1.89	1.89	1.89	1.88	1.88	1.88	1.88	1.87	1.87	1.87
	6	1.62	1.76	1.78	1.79	1.79	1.78	1.78	1.78	1.78	1.77	1.77	1.77	1.76	1.76	1.75	1.75	1.75	1.74	1.74	1.74
	7	1.57	1.70	1.72	1.72	1.71	1.71	1.70	1.70	1.70	1.69	1.69	1.68	1.68	1.67	1.67	1.66	1.66	1.65	1.65	1.65
	8	1.54	1.66	1.67	1.66	1.66	1.65	1.65	1.64	1.64	1.63	1.63	1.62	1.62	1.61	1.60	1.60	1.59	1.59	1.58	1.58
	9	1.51	1.62	1.63	1.63	1.62	1.61	1.61	1.60	1.60	1.59	1.59	1.58	1.57	1.56	1.56	1.55	1.54	1.54	1.53	1.53
	10	1.49	1.60	1.60	1.59	1.59	1.58	1.57	1.57	1.56	1.56	1.55	1.54	1.53	1.52	1.52	1.51	1.51	1.50	1.49	1.48
	11	1.47	1.58	1.58	1.57	1.56	1.55	1.54	1.54	1.53	1.53	1.52	1.51	1.50	1.49	1.49	1.48	1.47	1.47	1.46	1.45
	12	1.46	1.56	1.56	1.55	1.54	1.53	1.53	1.52	1.51	1.51	1.50	1.49	1.48	1.47	1.46	1.45	1.45	1.44	1.43	1.42
	13	1.45	1.55	1.55	1.53	1.52	1.51	1.51	1.50	1.49	1.49	1.48	1.47	1.46	1.45	1.44	1.43	1.42	1.42	1.41	1.40
	14	1.44	1.53	1.53	1.52	1.51	1.50	1.50	1.49	1.48	1.47	1.46	1.45	1.44	1.43	1.42	1.41	1.41	1.40	1.39	1.38
	15	1.43	1.52	1.52	1.51	1.49	1.48	1.48	1.47	1.46	1.46	1.45	1.44	1.43	1.41	1.41	1.40	1.39	1.38	1.37	1.36
	16	1.42	1.51	1.51	1.50	1.48	1.47	1.47	1.46	1.45	1.44	1.44	1.43	1.41	1.40	1.39	1.38	1.37	1.36	1.35	1.34
	17	1.42	1.51	1.50	1.49	1.47	1.46	1.46	1.45	1.44	1.43	1.43	1.41	1.40	1.39	1.38	1.37	1.36	1.35	1.34	1.33
	18	1.41	1.50	1.49	1.48	1.46	1.45	1.45	1.44	1.43	1.42	1.42	1.40	1.39	1.38	1.37	1.36	1.35	1.34	1.33	1.32
	19	1.41	1.49	1.49	1.47	1.46	1.44	1.44	1.43	1.42	1.41	1.41	1.40	1.38	1.37	1.36	1.35	1.34	1.33	1.32	1.30
	20	1.40	1.49	1.48	1.47	1.45	1.44	1.44	1.43	1.42	1.41	1.40	1.39	1.37	1.36	1.35	1.34	1.33	1.32	1.31	1.29
	21	1.40	1.48	1.48	1.46	1.44	1.43	1.43	1.42	1.41	1.40	1.39	1.38	1.37	1.35	1.34	1.33	1.32	1.31	1.30	1.28
	22	1.40	1.48	1.47	1.45	1.44	1.42	1.42	1.41	1.40	1.39	1.39	1.37	1.36	1.34	1.33	1.32	1.31	1.30	1.29	1.28
	23	1.39	1.47	1.47	1.45	1.43	1.42	1.42	1.41	1.40	1.39	1.38	1.37	1.35	1.34	1.33	1.32	1.31	1.30	1.28	1.27
	24	1.39	1.47	1.46	1.44	1.43	1.41	1.41	1.40	1.39	1.38	1.38	1.36	1.35	1.33	1.32	1.31	1.30	1.29	1.28	1.26
	25	1.39	1.47	1.46	1.44	1.42	1.41	1.41	1.40	1.39	1.38	1.37	1.36	1.34	1.33	1.32	1.31	1.29	1.28	1.27	1.25
	26	1.38	1.46	1.45	1.44	1.42	1.41	1.41	1.39	1.38	1.37	1.37	1.35	1.34	1.32	1.31	1.30	1.29	1.28	1.26	1.25
	27	1.38	1.46	1.45	1.43	1.42	1.40	1.40	1.39	1.38	1.37	1.36	1.35	1.33	1.32	1.31	1.30	1.28	1.27	1.26	1.24
	28	1.38	1.46	1.45	1.43	1.41	1.40	1.40	1.39	1.38	1.37	1.36	1.34	1.33	1.31	1.30	1.29	1.28	1.27	1.25	1.24
	29	1.38	1.45	1.45	1.43	1.41	1.40	1.40	1.38	1.37	1.36	1.35	1.34	1.32	1.31	1.30	1.29	1.27	1.26	1.25	1.23
	30	1.38	1.45	1.44	1.42	1.41	1.39	1.39	1.38	1.37	1.36	1.35	1.34	1.32	1.30	1.29	1.28	1.27	1.26	1.24	1.23
40	1.36	1.44	1.42	1.40	1.39	1.37	1.37	1.36	1.35	1.34	1.33	1.31	1.30	1.28	1.26	1.25	1.24	1.22	1.21	1.19	
60	1.35	1.42	1.41	1.38	1.37	1.35	1.35	1.33	1.32	1.31	1.30	1.29	1.27	1.25	1.24	1.22	1.21	1.19	1.17	1.15	
120	1.34	1.40	1.39	1.37	1.35	1.33	1.33	1.31	1.30	1.29	1.28	1.26	1.24	1.22	1.21	1.19	1.18	1.16	1.13	1.10	
∞	1.32	1.39	1.37	1.35	1.33	1.31	1.31	1.29	1.28	1.27	1.25	1.24	1.22	1.19	1.18	1.16	1.14	1.12	1.08	1.00	

Valores críticos f_{α, v_1, v_2} de la distribución F

$\alpha = 0.1$



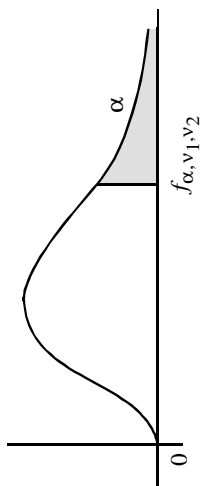
		Número de grados de libertad del numerador (v_1)																			
		1	2	3	4	5	6	7	8	9	10	12	15	20	24	30	40	60	120	∞	
Número de grados de libertad del denominador (v_2)	1	39.86	49.50	53.59	55.83	57.24	58.20	58.91	59.44	59.86	60.19	60.71	61.22	61.74	62.00	62.26	62.53	62.79	63.06	63.33	
	2	8.53	9.00	9.16	9.24	9.29	9.33	9.35	9.37	9.38	9.39	9.41	9.42	9.42	9.44	9.45	9.46	9.47	9.47	9.48	9.49
	3	5.54	5.46	5.39	5.34	5.31	5.28	5.27	5.25	5.24	5.23	5.23	5.22	5.20	5.18	5.17	5.17	5.16	5.15	5.14	5.13
	4	4.54	4.32	4.19	4.11	4.05	4.01	3.98	3.95	3.94	3.92	3.92	3.90	3.87	3.84	3.83	3.82	3.80	3.79	3.78	3.76
	5	4.06	3.78	3.62	3.52	3.45	3.40	3.37	3.34	3.32	3.30	3.30	3.27	3.24	3.21	3.19	3.17	3.16	3.14	3.12	3.11
	6	3.78	3.46	3.29	3.18	3.11	3.05	3.01	2.98	2.96	2.94	2.94	2.90	2.87	2.84	2.82	2.80	2.78	2.76	2.74	2.72
	7	3.59	3.26	3.07	2.96	2.88	2.83	2.78	2.75	2.72	2.70	2.70	2.67	2.63	2.59	2.58	2.56	2.54	2.51	2.49	2.47
	8	3.46	3.11	2.92	2.81	2.73	2.67	2.62	2.59	2.56	2.54	2.54	2.50	2.46	2.42	2.40	2.38	2.36	2.34	2.32	2.29
	9	3.36	3.01	2.81	2.69	2.61	2.55	2.51	2.47	2.44	2.42	2.42	2.38	2.34	2.30	2.28	2.25	2.23	2.21	2.18	2.16
	10	3.29	2.92	2.73	2.61	2.52	2.46	2.41	2.38	2.35	2.32	2.32	2.28	2.24	2.20	2.18	2.16	2.13	2.11	2.08	2.06
	11	3.23	2.86	2.66	2.54	2.45	2.39	2.34	2.30	2.27	2.25	2.25	2.21	2.17	2.12	2.10	2.08	2.05	2.03	2.00	1.97
	12	3.18	2.81	2.61	2.48	2.39	2.33	2.28	2.24	2.21	2.19	2.19	2.15	2.10	2.06	2.04	2.01	1.99	1.96	1.93	1.90
	13	3.14	2.76	2.56	2.43	2.35	2.28	2.23	2.20	2.16	2.14	2.14	2.10	2.05	2.01	1.98	1.96	1.93	1.90	1.88	1.85
	14	3.10	2.73	2.52	2.39	2.31	2.24	2.19	2.15	2.12	2.10	2.10	2.05	2.01	1.96	1.94	1.91	1.89	1.86	1.83	1.80
	15	3.07	2.70	2.49	2.36	2.27	2.21	2.16	2.12	2.09	2.06	2.06	2.02	1.97	1.92	1.90	1.87	1.85	1.82	1.79	1.76
	16	3.05	2.67	2.46	2.33	2.24	2.18	2.13	2.09	2.06	2.03	2.03	1.99	1.94	1.89	1.87	1.84	1.81	1.78	1.75	1.72
	17	3.03	2.64	2.44	2.31	2.22	2.15	2.10	2.06	2.03	2.00	2.00	1.96	1.91	1.86	1.84	1.81	1.78	1.75	1.72	1.69
	18	3.01	2.62	2.42	2.29	2.20	2.13	2.08	2.04	2.00	1.98	1.98	1.93	1.89	1.84	1.81	1.78	1.75	1.72	1.69	1.66
	19	2.99	2.61	2.40	2.27	2.18	2.11	2.06	2.02	1.98	1.96	1.96	1.91	1.86	1.81	1.79	1.76	1.73	1.70	1.67	1.63
	20	2.97	2.59	2.38	2.25	2.16	2.09	2.04	2.00	1.96	1.94	1.94	1.89	1.84	1.79	1.77	1.74	1.71	1.68	1.64	1.61
	21	2.96	2.57	2.36	2.23	2.14	2.08	2.02	1.98	1.95	1.92	1.92	1.87	1.83	1.78	1.75	1.72	1.69	1.66	1.62	1.59
	22	2.95	2.56	2.35	2.22	2.13	2.06	2.01	1.97	1.93	1.90	1.90	1.86	1.81	1.76	1.73	1.70	1.67	1.64	1.60	1.57
	23	2.94	2.55	2.34	2.21	2.11	2.05	1.99	1.95	1.92	1.89	1.89	1.84	1.80	1.74	1.72	1.69	1.66	1.62	1.59	1.55
	24	2.93	2.54	2.33	2.19	2.10	2.04	1.98	1.94	1.91	1.88	1.88	1.83	1.78	1.73	1.70	1.67	1.64	1.61	1.57	1.53
	25	2.92	2.53	2.32	2.18	2.09	2.02	1.97	1.93	1.89	1.87	1.87	1.82	1.77	1.72	1.69	1.66	1.63	1.59	1.56	1.52
	26	2.91	2.52	2.31	2.17	2.08	2.01	1.96	1.92	1.88	1.86	1.86	1.81	1.76	1.71	1.68	1.65	1.61	1.58	1.54	1.50
	27	2.90	2.51	2.30	2.17	2.07	2.00	1.95	1.91	1.87	1.85	1.85	1.80	1.75	1.70	1.67	1.64	1.60	1.57	1.53	1.49
	28	2.89	2.50	2.29	2.16	2.06	2.00	1.94	1.90	1.87	1.84	1.84	1.79	1.74	1.69	1.66	1.63	1.59	1.56	1.52	1.48
	29	2.89	2.50	2.28	2.15	2.06	1.99	1.93	1.89	1.86	1.83	1.83	1.78	1.73	1.68	1.65	1.62	1.58	1.55	1.51	1.47
	30	2.88	2.49	2.28	2.14	2.05	1.98	1.93	1.88	1.85	1.82	1.82	1.77	1.72	1.67	1.64	1.61	1.57	1.54	1.50	1.46
40	2.84	2.44	2.23	2.09	2.00	1.93	1.87	1.83	1.79	1.76	1.76	1.71	1.66	1.61	1.57	1.54	1.51	1.47	1.42	1.38	
60	2.79	2.39	2.18	2.04	1.95	1.87	1.82	1.77	1.74	1.71	1.71	1.66	1.60	1.54	1.51	1.48	1.44	1.40	1.35	1.29	
120	2.75	2.35	2.13	1.99	1.90	1.82	1.77	1.72	1.68	1.65	1.65	1.60	1.55	1.48	1.45	1.41	1.37	1.32	1.26	1.19	
∞	2.71	2.30	2.08	1.94	1.85	1.77	1.72	1.67	1.63	1.60	1.60	1.55	1.49	1.42	1.38	1.34	1.30	1.24	1.17	1.00	



Valores críticos f_{α, v_1, v_2} de la distribución F

$\alpha = 0.05$

		Número de grados de libertad del numerador (v_1)																				
		1	2	3	4	5	6	7	8	9	10	12	15	20	24	30	40	60	120	∞		
Número de grados de libertad del denominador (v_2)	1	161.45	199.50	215.71	224.58	230.16	233.99	236.77	238.88	240.54	241.88	243.90	245.95	248.02	249.05	250.10	251.14	252.20	253.25	254.32		
	2	18.51	19.00	19.16	19.25	19.30	19.33	19.35	19.37	19.38	19.40	19.40	19.41	19.43	19.45	19.45	19.46	19.47	19.48	19.49	19.50	
	3	10.13	9.55	9.28	9.12	9.01	8.94	8.89	8.85	8.81	8.79	8.79	8.74	8.70	8.66	8.64	8.62	8.59	8.57	8.55	8.53	
	4	7.71	6.94	6.59	6.39	6.26	6.16	6.09	6.04	6.00	5.96	5.96	5.91	5.86	5.80	5.77	5.75	5.72	5.69	5.66	5.63	
	5	6.61	5.79	5.41	5.19	5.05	4.95	4.88	4.82	4.77	4.74	4.74	4.68	4.62	4.56	4.53	4.50	4.46	4.43	4.40	4.37	
	6	5.99	5.14	4.76	4.53	4.39	4.28	4.21	4.15	4.10	4.06	4.06	4.00	3.94	3.87	3.84	3.81	3.77	3.74	3.70	3.67	
	7	5.59	4.74	4.35	4.12	3.97	3.87	3.79	3.73	3.68	3.64	3.64	3.57	3.51	3.44	3.41	3.38	3.34	3.30	3.27	3.23	
	8	5.32	4.46	4.07	3.84	3.69	3.58	3.50	3.44	3.39	3.35	3.35	3.28	3.22	3.15	3.12	3.08	3.04	3.01	2.97	2.93	
	9	5.12	4.26	3.86	3.63	3.48	3.37	3.29	3.23	3.18	3.14	3.14	3.07	3.01	2.94	2.90	2.86	2.83	2.79	2.75	2.71	
	10	4.96	4.10	3.71	3.48	3.33	3.22	3.14	3.07	3.02	2.98	2.98	2.91	2.85	2.77	2.74	2.70	2.66	2.62	2.58	2.54	
	11	4.84	3.98	3.59	3.36	3.20	3.09	3.01	2.95	2.90	2.85	2.85	2.79	2.72	2.65	2.61	2.57	2.53	2.49	2.45	2.40	
	12	4.75	3.89	3.49	3.26	3.11	3.00	2.91	2.85	2.80	2.75	2.75	2.69	2.62	2.54	2.51	2.47	2.43	2.38	2.34	2.30	
	13	4.67	3.81	3.41	3.18	3.03	2.92	2.83	2.77	2.71	2.67	2.67	2.60	2.53	2.46	2.42	2.38	2.34	2.30	2.25	2.21	
	14	4.60	3.74	3.34	3.11	2.96	2.85	2.76	2.70	2.65	2.60	2.60	2.53	2.46	2.39	2.35	2.31	2.27	2.22	2.18	2.13	
	15	4.54	3.68	3.29	3.06	2.90	2.79	2.71	2.64	2.59	2.54	2.54	2.48	2.40	2.33	2.29	2.25	2.20	2.16	2.11	2.07	
	16	4.49	3.63	3.24	3.01	2.85	2.74	2.66	2.59	2.54	2.49	2.49	2.42	2.35	2.28	2.24	2.19	2.15	2.11	2.06	2.01	
	17	4.45	3.59	3.20	2.96	2.81	2.70	2.61	2.55	2.49	2.45	2.45	2.38	2.31	2.23	2.19	2.15	2.10	2.06	2.01	1.96	
	18	4.41	3.55	3.16	2.93	2.77	2.66	2.58	2.51	2.46	2.41	2.41	2.34	2.27	2.19	2.15	2.11	2.06	2.02	1.97	1.92	
	19	4.38	3.52	3.13	2.90	2.74	2.63	2.54	2.48	2.42	2.38	2.38	2.31	2.23	2.16	2.11	2.07	2.03	1.98	1.93	1.88	
	20	4.35	3.49	3.10	2.87	2.71	2.60	2.51	2.45	2.39	2.35	2.35	2.28	2.20	2.12	2.08	2.04	1.99	1.95	1.90	1.84	
	21	4.32	3.47	3.07	2.84	2.68	2.57	2.49	2.42	2.37	2.32	2.32	2.25	2.18	2.10	2.05	2.01	1.96	1.92	1.87	1.81	
	22	4.30	3.44	3.05	2.82	2.66	2.55	2.46	2.40	2.34	2.30	2.30	2.23	2.15	2.07	2.03	1.98	1.94	1.89	1.84	1.78	
	23	4.28	3.42	3.03	2.80	2.64	2.53	2.44	2.37	2.32	2.27	2.27	2.20	2.13	2.05	2.01	1.96	1.91	1.86	1.81	1.76	
	24	4.26	3.40	3.01	2.78	2.62	2.51	2.42	2.36	2.30	2.25	2.25	2.18	2.11	2.03	1.98	1.94	1.89	1.84	1.79	1.73	
	25	4.24	3.39	2.99	2.76	2.60	2.49	2.40	2.34	2.28	2.24	2.24	2.16	2.09	2.01	1.96	1.92	1.87	1.82	1.77	1.71	
	26	4.23	3.37	2.98	2.74	2.59	2.47	2.39	2.32	2.27	2.22	2.22	2.15	2.07	1.99	1.95	1.90	1.85	1.80	1.75	1.69	
	27	4.21	3.35	2.96	2.73	2.57	2.46	2.37	2.31	2.25	2.20	2.20	2.13	2.06	1.97	1.93	1.88	1.84	1.79	1.73	1.67	
	28	4.20	3.34	2.95	2.71	2.56	2.45	2.36	2.29	2.24	2.19	2.19	2.12	2.04	1.96	1.91	1.87	1.82	1.77	1.71	1.65	
	29	4.18	3.33	2.93	2.70	2.55	2.43	2.35	2.28	2.22	2.18	2.18	2.10	2.03	1.94	1.90	1.85	1.81	1.75	1.70	1.64	
	30	4.17	3.32	2.92	2.69	2.53	2.42	2.33	2.27	2.21	2.16	2.16	2.09	2.01	1.93	1.89	1.84	1.79	1.74	1.68	1.62	
40	4.08	3.23	2.84	2.61	2.45	2.34	2.25	2.18	2.12	2.08	2.08	2.00	1.92	1.84	1.79	1.74	1.69	1.64	1.58	1.51		
60	4.00	3.15	2.76	2.53	2.37	2.25	2.17	2.10	2.04	1.99	1.99	1.92	1.84	1.75	1.70	1.65	1.59	1.53	1.47	1.39		
120	3.92	3.07	2.68	2.45	2.29	2.18	2.09	2.02	1.96	1.91	1.91	1.83	1.75	1.66	1.61	1.55	1.50	1.43	1.35	1.25		
∞	3.84	3.00	2.60	2.37	2.21	2.10	2.01	1.94	1.88	1.83	1.83	1.75	1.67	1.57	1.52	1.46	1.39	1.32	1.22	1.00		



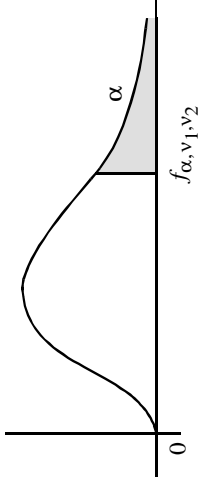
Valores críticos f_{α, v_1, v_2} de la distribución F

$\alpha = 0.025$

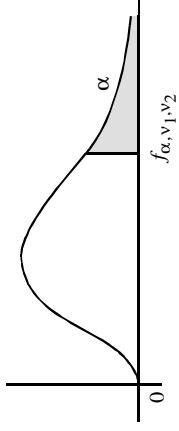
		Número de grados de libertad del numerador (v_1)																			
		1	2	3	4	5	6	7	8	9	10	12	15	20	24	30	40	60	120	∞	
Número de grados de libertad del denominador (v_2)	1	647.79	799.48	864.15	899.60	921.83	937.11	948.20	956.64	963.28	968.63	976.72	984.87	993.08	997.27	1001.40	1005.60	1009.79	1014.04	1018.26	
	2	38.51	39.00	39.17	39.25	39.30	39.33	39.36	39.37	39.39	39.40	39.41	39.43	39.45	39.46	39.46	39.47	39.47	39.48	39.49	39.50
	3	17.44	16.04	15.44	15.10	14.88	14.73	14.62	14.54	14.47	14.42	14.34	14.25	14.17	14.12	14.08	14.04	13.99	13.95	13.90	13.90
	4	12.22	10.65	9.98	9.60	9.36	9.20	9.07	8.98	8.90	8.84	8.75	8.66	8.56	8.51	8.46	8.41	8.36	8.31	8.26	8.26
	5	10.01	8.43	7.76	7.39	7.15	6.98	6.85	6.76	6.68	6.62	6.52	6.43	6.33	6.28	6.23	6.18	6.12	6.07	6.02	6.02
	6	8.81	7.26	6.60	6.23	5.99	5.82	5.70	5.60	5.52	5.46	5.37	5.27	5.17	5.12	5.07	5.01	4.96	4.90	4.85	4.85
	7	8.07	6.54	5.89	5.52	5.29	5.12	4.99	4.90	4.82	4.76	4.67	4.57	4.47	4.41	4.36	4.31	4.25	4.20	4.14	4.14
	8	7.57	6.06	5.42	5.05	4.82	4.65	4.53	4.43	4.36	4.30	4.20	4.10	4.00	3.95	3.89	3.84	3.78	3.73	3.67	3.67
	9	7.21	5.71	5.08	4.72	4.48	4.32	4.20	4.10	4.03	3.96	3.87	3.77	3.67	3.61	3.56	3.51	3.45	3.39	3.33	3.33
	10	6.94	5.46	4.83	4.47	4.24	4.07	3.95	3.85	3.78	3.72	3.62	3.52	3.42	3.37	3.31	3.26	3.20	3.14	3.08	3.08
	11	6.72	5.26	4.63	4.28	4.04	3.88	3.76	3.66	3.59	3.53	3.43	3.33	3.23	3.17	3.12	3.06	3.00	2.94	2.88	2.88
	12	6.55	5.10	4.47	4.12	3.89	3.73	3.61	3.51	3.44	3.37	3.28	3.18	3.07	3.02	2.96	2.91	2.85	2.79	2.72	2.72
	13	6.41	4.97	4.35	4.00	3.77	3.60	3.48	3.39	3.31	3.25	3.15	3.05	2.95	2.89	2.84	2.78	2.72	2.66	2.60	2.60
	14	6.30	4.86	4.24	3.89	3.66	3.50	3.38	3.29	3.21	3.15	3.05	2.95	2.84	2.79	2.73	2.67	2.61	2.55	2.49	2.49
	15	6.20	4.77	4.15	3.80	3.58	3.41	3.29	3.20	3.12	3.06	2.96	2.86	2.76	2.70	2.64	2.59	2.52	2.46	2.40	2.40
16	6.12	4.69	4.08	3.73	3.50	3.34	3.22	3.12	3.05	2.99	2.89	2.79	2.68	2.63	2.57	2.51	2.45	2.38	2.32	2.32	
17	6.04	4.62	4.01	3.66	3.44	3.28	3.16	3.06	2.98	2.92	2.82	2.72	2.62	2.56	2.50	2.44	2.38	2.32	2.25	2.25	
18	5.98	4.56	3.95	3.61	3.38	3.22	3.10	3.01	2.93	2.87	2.77	2.67	2.56	2.50	2.44	2.38	2.32	2.26	2.19	2.19	
19	5.92	4.51	3.90	3.56	3.33	3.17	3.05	2.96	2.88	2.82	2.72	2.62	2.51	2.45	2.39	2.33	2.27	2.20	2.13	2.13	
20	5.87	4.46	3.86	3.51	3.29	3.13	3.01	2.91	2.84	2.77	2.68	2.57	2.46	2.41	2.35	2.29	2.22	2.16	2.09	2.09	
21	5.83	4.42	3.82	3.48	3.25	3.09	2.97	2.87	2.80	2.73	2.64	2.53	2.42	2.37	2.31	2.25	2.18	2.11	2.04	2.04	
22	5.79	4.38	3.78	3.44	3.22	3.05	2.93	2.84	2.76	2.70	2.60	2.50	2.39	2.33	2.27	2.21	2.14	2.08	2.00	2.00	
23	5.75	4.35	3.75	3.41	3.18	3.02	2.90	2.81	2.73	2.67	2.57	2.47	2.36	2.30	2.24	2.18	2.11	2.04	1.97	1.97	
24	5.72	4.32	3.72	3.38	3.15	2.99	2.87	2.78	2.70	2.64	2.54	2.44	2.33	2.27	2.21	2.15	2.08	2.01	1.94	1.94	
25	5.69	4.29	3.69	3.35	3.13	2.97	2.85	2.75	2.68	2.61	2.51	2.41	2.30	2.24	2.18	2.12	2.05	1.98	1.91	1.91	
26	5.66	4.27	3.67	3.33	3.10	2.94	2.82	2.73	2.65	2.59	2.49	2.39	2.28	2.22	2.16	2.09	2.03	1.95	1.88	1.88	
27	5.63	4.24	3.65	3.31	3.08	2.92	2.80	2.71	2.63	2.57	2.47	2.36	2.25	2.19	2.13	2.07	2.00	1.93	1.85	1.85	
28	5.61	4.22	3.63	3.29	3.06	2.90	2.78	2.69	2.61	2.55	2.45	2.34	2.23	2.17	2.11	2.05	1.98	1.91	1.83	1.83	
29	5.59	4.20	3.61	3.27	3.04	2.88	2.76	2.67	2.59	2.53	2.43	2.32	2.21	2.15	2.09	2.03	1.96	1.89	1.81	1.81	
30	5.57	4.18	3.59	3.25	3.03	2.87	2.75	2.65	2.57	2.51	2.41	2.31	2.20	2.14	2.07	2.01	1.94	1.87	1.79	1.79	
40	5.42	4.05	3.46	3.13	2.90	2.74	2.62	2.53	2.45	2.39	2.29	2.18	2.07	2.01	1.94	1.88	1.80	1.72	1.64	1.64	
60	5.29	3.93	3.34	3.01	2.79	2.63	2.51	2.41	2.33	2.27	2.17	2.06	1.94	1.88	1.82	1.74	1.67	1.58	1.48	1.48	
120	5.15	3.80	3.23	2.89	2.67	2.52	2.39	2.30	2.22	2.16	2.05	1.94	1.82	1.76	1.69	1.61	1.53	1.43	1.31	1.31	
∞	5.02	3.69	3.12	2.79	2.57	2.41	2.29	2.19	2.11	2.05	1.94	1.83	1.71	1.64	1.57	1.48	1.39	1.27	1.00	1.00	

Valores críticos f_{α, v_1, v_2} de la distribución F

$\alpha = 0.01$



		Número de grados de libertad del numerador (v_1)																			
		1	2	3	4	5	6	7	8	9	10	12	15	20	24	30	40	60	120	∞	
Número de grados de libertad del denominador (v_2)	1	4052.18	4999.34	5403.53	5624.26	5763.96	5858.95	5928.33	5980.95	6022.40	6055.93	6106.68	6156.97	6208.66	6234.27	6260.35	6286.43	6312.97	6339.51	6365.59	
	2	98.50	99.00	99.16	99.25	99.30	99.33	99.36	99.38	99.39	99.40	99.40	99.42	99.43	99.45	99.46	99.47	99.48	99.48	99.49	99.50
	3	34.12	30.82	29.46	28.71	28.24	27.91	27.67	27.49	27.34	27.23	27.23	27.05	26.87	26.69	26.60	26.50	26.41	26.32	26.22	26.13
	4	21.20	18.00	16.69	15.98	15.52	15.21	14.98	14.80	14.66	14.55	14.55	14.37	14.20	14.02	13.93	13.84	13.75	13.65	13.56	13.46
	5	16.26	13.27	12.06	11.39	10.97	10.67	10.46	10.29	10.16	10.05	10.05	9.89	9.72	9.55	9.47	9.38	9.29	9.20	9.11	9.02
	6	13.75	10.92	9.78	9.15	8.75	8.47	8.26	8.10	7.98	7.87	7.87	7.72	7.56	7.40	7.31	7.23	7.14	7.06	6.97	6.88
	7	12.25	9.55	8.45	7.85	7.46	7.19	6.99	6.84	6.72	6.62	6.62	6.47	6.31	6.16	6.07	5.99	5.91	5.82	5.74	5.65
	8	11.26	8.65	7.59	7.01	6.63	6.37	6.18	6.03	5.91	5.81	5.81	5.67	5.52	5.36	5.28	5.20	5.12	5.03	4.95	4.86
	9	10.56	8.02	6.99	6.42	6.06	5.80	5.61	5.47	5.35	5.26	5.26	5.11	4.96	4.81	4.73	4.65	4.57	4.48	4.40	4.31
	10	10.04	7.56	6.55	5.99	5.64	5.39	5.20	5.06	4.94	4.85	4.85	4.71	4.56	4.41	4.33	4.25	4.17	4.08	4.00	3.91
	11	9.65	7.21	6.22	5.67	5.32	5.07	4.89	4.74	4.63	4.54	4.54	4.40	4.25	4.10	4.02	3.94	3.86	3.78	3.69	3.60
	12	9.33	6.93	5.95	5.41	5.06	4.82	4.64	4.50	4.39	4.30	4.30	4.16	4.01	3.86	3.78	3.70	3.62	3.54	3.45	3.36
	13	9.07	6.70	5.74	5.21	4.86	4.62	4.44	4.30	4.19	4.10	4.10	3.96	3.82	3.66	3.59	3.51	3.43	3.34	3.25	3.17
	14	8.86	6.51	5.56	5.04	4.69	4.46	4.28	4.14	4.03	3.94	3.94	3.80	3.66	3.51	3.43	3.35	3.27	3.18	3.09	3.00
	15	8.68	6.36	5.42	4.89	4.56	4.32	4.14	4.00	3.89	3.80	3.80	3.67	3.52	3.37	3.29	3.21	3.13	3.05	2.96	2.87
	16	8.53	6.23	5.29	4.77	4.44	4.20	4.03	3.89	3.78	3.69	3.69	3.55	3.41	3.26	3.18	3.10	3.02	2.93	2.84	2.75
	17	8.40	6.11	5.19	4.67	4.34	4.10	3.93	3.79	3.68	3.59	3.59	3.46	3.31	3.16	3.08	3.00	2.92	2.83	2.75	2.65
	18	8.29	6.01	5.09	4.58	4.25	4.01	3.84	3.71	3.60	3.51	3.51	3.37	3.23	3.08	3.00	2.92	2.84	2.75	2.66	2.57
	19	8.18	5.93	5.01	4.50	4.17	3.94	3.77	3.63	3.52	3.43	3.43	3.30	3.15	3.00	2.92	2.84	2.76	2.67	2.58	2.49
	20	8.10	5.85	4.94	4.43	4.10	3.87	3.70	3.56	3.46	3.37	3.37	3.23	3.09	2.94	2.86	2.78	2.69	2.61	2.52	2.42
	21	8.02	5.78	4.87	4.37	4.04	3.81	3.64	3.51	3.40	3.31	3.31	3.17	3.03	2.88	2.80	2.72	2.64	2.55	2.46	2.36
	22	7.95	5.72	4.82	4.31	3.99	3.76	3.59	3.45	3.35	3.26	3.26	3.12	2.98	2.83	2.75	2.67	2.58	2.50	2.40	2.31
	23	7.88	5.66	4.76	4.26	3.94	3.71	3.54	3.41	3.30	3.21	3.21	3.07	2.93	2.78	2.70	2.62	2.54	2.45	2.35	2.26
	24	7.82	5.61	4.72	4.22	3.90	3.67	3.50	3.36	3.26	3.17	3.17	3.03	2.89	2.74	2.66	2.58	2.49	2.40	2.31	2.21
	25	7.77	5.57	4.68	4.18	3.85	3.63	3.46	3.32	3.22	3.13	3.13	2.99	2.85	2.70	2.62	2.54	2.45	2.36	2.27	2.17
	26	7.72	5.53	4.64	4.14	3.82	3.59	3.42	3.29	3.18	3.09	3.09	2.96	2.81	2.66	2.58	2.50	2.42	2.33	2.23	2.13
	27	7.68	5.49	4.60	4.11	3.78	3.56	3.39	3.26	3.15	3.06	3.06	2.93	2.78	2.63	2.55	2.47	2.38	2.29	2.20	2.10
	28	7.64	5.45	4.57	4.07	3.75	3.53	3.36	3.23	3.12	3.03	3.03	2.90	2.75	2.60	2.52	2.44	2.35	2.26	2.17	2.06
	29	7.60	5.42	4.54	4.04	3.73	3.50	3.33	3.20	3.09	3.00	3.00	2.87	2.73	2.57	2.49	2.41	2.33	2.23	2.14	2.03
	30	7.56	5.39	4.51	4.02	3.70	3.47	3.30	3.17	3.07	2.98	2.98	2.84	2.70	2.55	2.47	2.39	2.30	2.21	2.11	2.01
40	7.31	5.18	4.31	3.83	3.51	3.29	3.12	2.99	2.89	2.80	2.80	2.66	2.52	2.37	2.29	2.20	2.11	2.02	1.92	1.80	
60	7.08	4.98	4.13	3.65	3.34	3.12	2.95	2.82	2.72	2.63	2.63	2.50	2.35	2.20	2.12	2.03	1.94	1.84	1.73	1.60	
120	6.85	4.79	3.95	3.48	3.17	2.96	2.79	2.66	2.56	2.47	2.47	2.34	2.19	2.03	1.95	1.86	1.76	1.66	1.53	1.38	
∞	6.63	4.61	3.78	3.32	3.02	2.80	2.64	2.51	2.41	2.32	2.32	2.18	2.04	1.88	1.79	1.70	1.59	1.47	1.32	1.00	



Valores críticos f_{α, v_1, v_2} de la distribución F

$\alpha = 0.005$

		Número de grados de libertad del numerador (v_1)																			
		1	2	3	4	5	6	7	8	9	10	12	15	20	24	30	40	60	120	∞	
1	16212.46	19997.36	21614.13	22500.75	23055.82	23439.53	23715.20	23923.81	24091.45	24221.84	24426.73	24631.62	24836.51	24937.09	25041.40	25145.71	25253.74	25358.05	25466.08		
2	198.50	199.01	199.16	199.24	199.30	199.33	199.36	199.38	199.39	199.39	199.42	199.43	199.45	199.45	199.48	199.48	199.48	199.48	199.49	199.51	
3	55.55	49.80	47.47	46.20	45.39	44.84	44.43	44.13	43.88	43.68	43.39	43.08	42.78	42.62	42.47	42.31	42.15	41.99	41.83		
4	31.33	26.28	24.26	23.15	22.46	21.98	21.62	21.35	21.14	20.97	20.70	20.44	20.17	20.03	19.89	19.75	19.61	19.47	19.32		
5	22.78	18.31	16.53	15.56	14.94	14.51	14.20	13.96	13.77	13.62	13.38	13.15	12.90	12.78	12.66	12.53	12.40	12.27	12.14		
6	18.63	14.54	12.92	12.03	11.46	11.07	10.79	10.57	10.39	10.25	10.03	9.81	9.59	9.47	9.36	9.24	9.12	9.00	8.88		
7	16.24	12.40	10.88	10.05	9.52	9.16	8.89	8.68	8.51	8.38	8.18	7.97	7.75	7.64	7.53	7.42	7.31	7.19	7.08		
8	14.69	11.04	9.60	8.81	8.30	7.95	7.69	7.50	7.34	7.21	7.01	6.81	6.61	6.50	6.40	6.29	6.18	6.06	5.95		
9	13.61	10.11	8.72	7.96	7.47	7.13	6.88	6.69	6.54	6.42	6.23	6.03	5.83	5.73	5.62	5.52	5.41	5.30	5.19		
10	12.83	9.43	8.08	7.34	6.87	6.54	6.30	6.12	5.97	5.85	5.66	5.47	5.27	5.17	5.07	4.97	4.86	4.75	4.64		
11	12.23	8.91	7.60	6.88	6.42	6.10	5.86	5.68	5.54	5.42	5.24	5.05	4.86	4.76	4.65	4.55	4.45	4.34	4.23		
12	11.75	8.51	7.23	6.52	6.07	5.76	5.52	5.35	5.20	5.09	4.91	4.72	4.53	4.43	4.33	4.23	4.12	4.01	3.90		
13	11.37	8.19	6.93	6.23	5.79	5.48	5.25	5.08	4.94	4.82	4.64	4.46	4.27	4.17	4.07	3.97	3.87	3.76	3.65		
14	11.06	7.92	6.68	6.00	5.56	5.26	5.03	4.86	4.72	4.60	4.43	4.25	4.06	3.96	3.86	3.76	3.66	3.55	3.44		
15	10.80	7.70	6.48	5.80	5.37	5.07	4.85	4.67	4.54	4.42	4.25	4.07	3.88	3.79	3.69	3.59	3.48	3.37	3.26		
16	10.58	7.51	6.30	5.64	5.21	4.91	4.69	4.52	4.38	4.27	4.10	3.92	3.73	3.64	3.54	3.44	3.33	3.22	3.11		
17	10.38	7.35	6.16	5.50	5.07	4.78	4.56	4.39	4.25	4.14	3.97	3.79	3.61	3.51	3.41	3.31	3.21	3.10	2.98		
18	10.22	7.21	6.03	5.37	4.94	4.66	4.44	4.28	4.14	4.03	3.86	3.68	3.50	3.40	3.30	3.20	3.10	2.99	2.87		
19	10.07	7.09	5.92	5.27	4.85	4.56	4.34	4.18	4.04	3.93	3.76	3.59	3.40	3.31	3.21	3.11	3.00	2.89	2.78		
20	9.94	6.99	5.82	5.17	4.76	4.47	4.26	4.09	3.96	3.85	3.68	3.50	3.32	3.22	3.12	3.02	2.92	2.81	2.69		
21	9.83	6.89	5.73	5.09	4.68	4.39	4.18	4.01	3.88	3.77	3.60	3.43	3.24	3.15	3.05	2.95	2.84	2.73	2.61		
22	9.73	6.81	5.65	5.02	4.61	4.32	4.11	3.94	3.81	3.70	3.54	3.36	3.18	3.08	2.98	2.88	2.77	2.66	2.55		
23	9.63	6.73	5.58	4.95	4.54	4.26	4.05	3.88	3.75	3.64	3.47	3.30	3.12	3.02	2.92	2.82	2.71	2.60	2.48		
24	9.55	6.66	5.52	4.89	4.49	4.20	3.99	3.83	3.69	3.59	3.42	3.25	3.06	2.97	2.87	2.77	2.66	2.55	2.43		
25	9.48	6.60	5.46	4.84	4.43	4.15	3.94	3.78	3.64	3.54	3.37	3.20	3.01	2.92	2.82	2.72	2.61	2.50	2.38		
26	9.41	6.54	5.41	4.79	4.38	4.10	3.89	3.73	3.60	3.49	3.33	3.15	2.97	2.87	2.77	2.67	2.56	2.45	2.33		
27	9.34	6.49	5.36	4.74	4.34	4.06	3.85	3.69	3.56	3.45	3.28	3.11	2.93	2.83	2.73	2.63	2.52	2.41	2.29		
28	9.28	6.44	5.32	4.70	4.30	4.02	3.81	3.65	3.52	3.41	3.25	3.07	2.89	2.79	2.69	2.59	2.48	2.37	2.25		
29	9.23	6.40	5.28	4.66	4.26	3.98	3.77	3.61	3.48	3.38	3.21	3.04	2.86	2.76	2.66	2.56	2.45	2.33	2.21		
30	9.18	6.35	5.24	4.62	4.23	3.95	3.74	3.58	3.45	3.34	3.18	3.01	2.82	2.73	2.63	2.52	2.42	2.30	2.18		
40	8.83	6.07	4.98	4.37	3.99	3.71	3.51	3.35	3.22	3.12	2.95	2.78	2.60	2.50	2.40	2.30	2.18	2.06	1.93		
60	8.49	5.79	4.73	4.14	3.76	3.49	3.29	3.13	3.01	2.90	2.74	2.57	2.39	2.29	2.19	2.08	1.96	1.83	1.69		
120	8.18	5.54	4.50	3.92	3.55	3.28	3.09	2.93	2.81	2.71	2.54	2.37	2.19	2.09	1.98	1.87	1.75	1.61	1.43		
∞	7.88	5.30	4.28	3.72	3.35	3.09	2.90	2.74	2.62	2.52	2.36	2.19	2.00	1.90	1.79	1.67	1.53	1.36	1.01		

Número de grados de libertad del denominador (v_2)

Intervalos de confianza al $100(1-\alpha) \%$

Distribución	Parámetro	Casos	Intervalo
$\mathcal{N}(\mu, \sigma)$	μ	σ conocida	$\bar{X} \pm z_{\frac{\alpha}{2}} \frac{\sigma}{\sqrt{n}}$
		σ desconocida	$n < 30$ $\bar{X} \pm t_{\frac{\alpha}{2}, n-1} \frac{S_c}{\sqrt{n}}$ $n \geq 30$ $\bar{X} \pm z_{\frac{\alpha}{2}} \frac{S_c}{\sqrt{n}}$
General ($n \geq 30$)	μ	σ conocida	$\bar{X} \pm z_{\frac{\alpha}{2}} \frac{\sigma}{\sqrt{n}}$
		σ desconocida	$\bar{X} \pm z_{\frac{\alpha}{2}} \frac{S_c}{\sqrt{n}}$
$\mathcal{B}(p)$	p	$n \geq 30$ $np, nq \geq 5$	$\hat{p} \pm z_{\frac{\alpha}{2}} \sqrt{\frac{\hat{p}\hat{q}}{n}}$ $\hat{p} = \bar{X}, \quad \hat{q} = 1 - \bar{X}$
$\mathcal{N}(\mu, \sigma)$	σ^2	μ conocida	$\left[\frac{nS_\mu^2}{\chi_{\frac{\alpha}{2}, n}^2}, \frac{nS_\mu^2}{\chi_{1-\frac{\alpha}{2}, n}^2} \right]$ $S_\mu^2 = \frac{1}{n} \sum_{i=1}^n (X_i - \mu)^2$
		μ desconocida	$\left[\frac{(n-1)S_c^2}{\chi_{\frac{\alpha}{2}, n-1}^2}, \frac{(n-1)S_c^2}{\chi_{1-\frac{\alpha}{2}, n-1}^2} \right]$ $S_c^2 = \frac{1}{n-1} \sum_{i=1}^n (X_i - \bar{X})^2$
$\mathcal{P}(\lambda)$	λ	$n \geq 30$	$\bar{X} \pm z_{\frac{\alpha}{2}} \sqrt{\frac{\bar{X}}{n}}$
$\mathcal{N}(\mu_1, \sigma_1)$ $\mathcal{N}(\mu_2, \sigma_2)$ Indep.	$\mu_1 - \mu_2$	σ_1, σ_2 conocidas	$\bar{X}_1 - \bar{X}_2 \pm z_{\frac{\alpha}{2}} \sqrt{\frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}}$
		$\sigma_1 = \sigma_2$ desconocidas	$\bar{X}_1 - \bar{X}_2 \pm t_{\frac{\alpha}{2}, n_1+n_2-2} S_p \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}$ $S_p^2 = \frac{(n_1-1)S_{c_1}^2 + (n_2-1)S_{c_2}^2}{n_1+n_2-2}$
		$\sigma_1 \neq \sigma_2$ desconocidas	$\bar{X}_1 - \bar{X}_2 \pm t_{\frac{\alpha}{2}, \nu} \sqrt{\frac{S_{c_1}^2}{n_1} + \frac{S_{c_2}^2}{n_2}}$ $\nu = \frac{\left(\frac{S_{c_1}^2}{n_1} + \frac{S_{c_2}^2}{n_2}\right)^2}{\left(\frac{S_{c_1}^2}{n_1}\right)^2 \frac{1}{n_1-1} + \left(\frac{S_{c_2}^2}{n_2}\right)^2 \frac{1}{n_2-1}} - 2$
$\mathcal{N}(\mu_1, \sigma_1)$ $\mathcal{N}(\mu_2, \sigma_2)$ Depen.	$\mu_D = \mu_1 - \mu_2$	σ_D conocida	$\bar{D} \pm z_{\frac{\alpha}{2}} \frac{\sigma_D}{\sqrt{n}}$
		σ_D desconocida	$n < 30$ $\bar{D} \pm t_{\frac{\alpha}{2}, n-1} \frac{S_{cD}}{\sqrt{n}}$ $n \geq 30$ $\bar{D} \pm z_{\frac{\alpha}{2}} \frac{S_{cD}}{\sqrt{n}}$
$\mathcal{N}(\mu_1, \sigma_1)$ $\mathcal{N}(\mu_2, \sigma_2)$	$\frac{\sigma_1^2}{\sigma_2^2}$	μ_1, μ_2 conocidas	$\left[\frac{S_{\mu_1}^2}{S_{\mu_2}^2} \frac{1}{f_{1-\frac{\alpha}{2}, n_1, n_2}}, \frac{S_{\mu_1}^2}{S_{\mu_2}^2} \frac{1}{f_{\frac{\alpha}{2}, n_1, n_2}} \right]$
		μ_1, μ_2 desconocidas	$\left[\frac{S_{c_1}^2}{S_{c_2}^2} \frac{1}{f_{1-\frac{\alpha}{2}, n_1-1, n_2-1}}, \frac{S_{c_1}^2}{S_{c_2}^2} \frac{1}{f_{\frac{\alpha}{2}, n_1-1, n_2-1}} \right]$
$\mathcal{B}(p_1)$ $\mathcal{B}(p_2)$	$p_1 - p_2$	$n_1, n_2 \geq 30$ $n_1 p_1, n_1 q_1 \geq 5$ $n_2 p_2, n_2 q_2 \geq 5$	$\hat{p}_1 - \hat{p}_2 \pm z_{\frac{\alpha}{2}} \sqrt{\frac{\hat{p}_1 \hat{q}_1}{n_1} + \frac{\hat{p}_2 \hat{q}_2}{n_2}}$ $\hat{p}_1 = \bar{X}_1, \quad \hat{q}_1 = 1 - \bar{X}_1$ $\hat{p}_2 = \bar{X}_2, \quad \hat{q}_2 = 1 - \bar{X}_2$

Contrastes de hipótesis sobre poblaciones normales

1. Contrastes sobre una población

Contrastes sobre μ con σ conocida		
Hipótesis	Estadístico	Región crítica
$\begin{cases} H_0 : \mu = \mu_0 \\ H_1 : \mu \neq \mu_0 \end{cases}$	$Z = \frac{\bar{X} - \mu_0}{\sigma} \sqrt{n} \sim \mathcal{N}(0, 1)$	$Z \leq -z_{\frac{\alpha}{2}} \quad \text{ó} \quad Z \geq z_{\frac{\alpha}{2}}$
$\begin{cases} H_0 : \mu = \mu_0 \\ H_1 : \mu < \mu_0 \end{cases}$		$Z \leq -z_{\alpha}$
$\begin{cases} H_0 : \mu = \mu_0 \\ H_1 : \mu > \mu_0 \end{cases}$		$Z \geq z_{\alpha}$

Contrastes sobre μ con σ desconocida		
Hipótesis	Estadístico	Región crítica
$\begin{cases} H_0 : \mu = \mu_0 \\ H_1 : \mu \neq \mu_0 \end{cases}$	$T = \frac{\bar{X} - \mu_0}{S_c} \sqrt{n} \sim t_{n-1}$	$T \leq -t_{\frac{\alpha}{2}, n-1} \quad \text{ó} \quad T \geq t_{\frac{\alpha}{2}, n-1}$
$\begin{cases} H_0 : \mu = \mu_0 \\ H_1 : \mu < \mu_0 \end{cases}$		$T \leq -t_{\alpha, n-1}$
$\begin{cases} H_0 : \mu = \mu_0 \\ H_1 : \mu > \mu_0 \end{cases}$		$T \geq t_{\alpha, n-1}$

Contrastes sobre σ^2 con μ conocida		
Hipótesis	Estadístico	Región crítica
$\begin{cases} H_0 : \sigma^2 = \sigma_0^2 \\ H_1 : \sigma^2 \neq \sigma_0^2 \end{cases}$	$\chi^2 = \frac{nS_{\mu}^2}{\sigma_0^2} \sim \chi_n^2$	$\chi^2 \leq \chi_{1-\frac{\alpha}{2}, n}^2 \quad \text{ó} \quad \chi^2 \geq \chi_{\frac{\alpha}{2}, n}^2$
$\begin{cases} H_0 : \sigma^2 = \sigma_0^2 \\ H_1 : \sigma^2 < \sigma_0^2 \end{cases}$		$\chi^2 \leq \chi_{1-\alpha, n}^2$
$\begin{cases} H_0 : \sigma^2 = \sigma_0^2 \\ H_1 : \sigma^2 > \sigma_0^2 \end{cases}$		$\chi^2 \geq \chi_{\alpha, n}^2$

Contrastes sobre σ^2 con μ desconocida		
Hipótesis	Estadístico	Región crítica
$\begin{cases} H_0 : \sigma^2 = \sigma_0^2 \\ H_1 : \sigma^2 \neq \sigma_0^2 \end{cases}$	$\chi^2 = \frac{(n-1)S_c^2}{\sigma_0^2} \sim \chi_{n-1}^2$	$\chi^2 \leq \chi_{1-\frac{\alpha}{2}, n-1}^2 \quad \text{ó} \quad \chi^2 \geq \chi_{\frac{\alpha}{2}, n-1}^2$
$\begin{cases} H_0 : \sigma^2 = \sigma_0^2 \\ H_1 : \sigma^2 < \sigma_0^2 \end{cases}$		$\chi^2 \leq \chi_{1-\alpha, n-1}^2$
$\begin{cases} H_0 : \sigma^2 = \sigma_0^2 \\ H_1 : \sigma^2 > \sigma_0^2 \end{cases}$		$\chi^2 \geq \chi_{\alpha, n-1}^2$

2. Contrastes sobre dos muestras pareadas

- Se considera la muestra de las diferencias y se aplican los contrastes para una población.

3. Contrastes sobre dos muestras independientes

Contrastes sobre diferencias de medias con varianzas conocidas		
Hipótesis	Estadístico	Región crítica
$\begin{cases} H_0 : \mu_1 - \mu_2 = \mu_0 \\ H_1 : \mu_1 - \mu_2 \neq \mu_0 \end{cases}$	$Z = \frac{\bar{X}_1 - \bar{X}_2 - \mu_0}{\sqrt{\frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}}} \sim \mathcal{N}(0, 1)$	$Z \leq -z_{\frac{\alpha}{2}} \quad \text{ó} \quad Z \geq z_{\frac{\alpha}{2}}$
$\begin{cases} H_0 : \mu_1 - \mu_2 = \mu_0 \\ H_1 : \mu_1 - \mu_2 < \mu_0 \end{cases}$		$Z \leq -z_\alpha$
$\begin{cases} H_0 : \mu_1 - \mu_2 = \mu_0 \\ H_1 : \mu_1 - \mu_2 > \mu_0 \end{cases}$		$Z \geq z_\alpha$

Contrastes sobre diferencias de medias con varianzas desconocidas e iguales		
Hipótesis	Estadístico	Región crítica
$\begin{cases} H_0 : \mu_1 - \mu_2 = \mu_0 \\ H_1 : \mu_1 - \mu_2 \neq \mu_0 \end{cases}$	$T = \frac{\bar{X}_1 - \bar{X}_2 - \mu_0}{\sqrt{\frac{(n_1 - 1)S_{c_1}^2 + (n_2 - 1)S_{c_2}^2}{n_1 + n_2 - 2} \left(\frac{1}{n_1} + \frac{1}{n_2} \right)}} \sim t_{n_1 + n_2 - 2}$	$T \leq -t_{\frac{\alpha}{2}, n_1 + n_2 - 2}$ $\text{ó} \quad T \geq t_{\frac{\alpha}{2}, n_1 + n_2 - 2}$
$\begin{cases} H_0 : \mu_1 - \mu_2 = \mu_0 \\ H_1 : \mu_1 - \mu_2 < \mu_0 \end{cases}$		$T \leq -t_{\alpha, n_1 + n_2 - 2}$
$\begin{cases} H_0 : \mu_1 - \mu_2 = \mu_0 \\ H_1 : \mu_1 - \mu_2 > \mu_0 \end{cases}$		$T \geq t_{\alpha, n_1 + n_2 - 2}$

Contrastes sobre diferencias de medias con varianzas desconocidas y distintas		
Hipótesis	Estadístico	Región crítica
$\begin{cases} H_0 : \mu_1 - \mu_2 = \mu_0 \\ H_1 : \mu_1 - \mu_2 \neq \mu_0 \end{cases}$	$T = \frac{\bar{X}_1 - \bar{X}_2 - \mu_0}{\sqrt{\frac{S_{c_1}^2}{n_1} + \frac{S_{c_2}^2}{n_2}}} \sim t_\nu$ $\nu = \frac{\left(\frac{S_{c_1}^2}{n_1} + \frac{S_{c_2}^2}{n_2} \right)^2}{\left(\frac{S_{c_1}^2}{n_1} \right)^2 \frac{1}{n_1 - 1} + \left(\frac{S_{c_2}^2}{n_2} \right)^2 \frac{1}{n_2 - 1}} - 2$	$T \leq -t_{\frac{\alpha}{2}, \nu} \quad \text{ó} \quad T \geq t_{\frac{\alpha}{2}, \nu}$
$\begin{cases} H_0 : \mu_1 - \mu_2 = \mu_0 \\ H_1 : \mu_1 - \mu_2 < \mu_0 \end{cases}$		$T \leq -t_{\alpha, \nu}$
$\begin{cases} H_0 : \mu_1 - \mu_2 = \mu_0 \\ H_1 : \mu_1 - \mu_2 > \mu_0 \end{cases}$		$T \geq t_{\alpha, \nu}$

Contrastes sobre igualdad de varianzas con medias desconocidas		
Hipótesis	Estadístico	Región crítica
$\begin{cases} H_0 : \sigma_1^2 = \sigma_2^2 \\ H_1 : \sigma_1^2 \neq \sigma_2^2 \end{cases}$	$\mathcal{F} = \frac{S_{c_1}^2}{S_{c_2}^2} \sim \mathcal{F}_{n_1 - 1, n_2 - 1}$	$\mathcal{F} \leq \mathcal{F}_{1 - \frac{\alpha}{2}, n_1 - 1, n_2 - 1} \quad \text{ó} \quad \mathcal{F} \geq \mathcal{F}_{\frac{\alpha}{2}, n_1 - 1, n_2 - 1}$
$\begin{cases} H_0 : \sigma_1^2 = \sigma_2^2 \\ H_1 : \sigma_1^2 < \sigma_2^2 \end{cases}$		$\mathcal{F} \leq \mathcal{F}_{1 - \alpha, n_1 - 1, n_2 - 1}$
$\begin{cases} H_0 : \sigma_1^2 = \sigma_2^2 \\ H_1 : \sigma_1^2 > \sigma_2^2 \end{cases}$		$\mathcal{F} \geq \mathcal{F}_{\alpha, n_1 - 1, n_2 - 1}$

Contrastes de hipótesis sobre los parámetros de una población

1. Contrastes sobre la media con varianza conocida:

Hipótesis	Estadístico	Región crítica
$\begin{cases} H_0 : \mu = \mu_0 \\ H_1 : \mu \neq \mu_0 \end{cases}$	$Z = \frac{\bar{X} - \mu_0}{\sigma} \sqrt{n}$	$Z \leq -z_{\frac{\alpha}{2}} \quad \text{ó} \quad Z \geq z_{\frac{\alpha}{2}}$
$\begin{cases} H_0 : \mu = \mu_0 \\ H_1 : \mu < \mu_0 \end{cases}$	Distribución $\mathcal{N}(0, 1)$	$Z \leq -z_{\alpha}$
$\begin{cases} H_0 : \mu = \mu_0 \\ H_1 : \mu > \mu_0 \end{cases}$	$(n \geq 30)$	$Z \geq z_{\alpha}$

2. Contrastes sobre la media con varianza desconocida:

Hipótesis	Estadístico	Región crítica
$\begin{cases} H_0 : \mu = \mu_0 \\ H_1 : \mu \neq \mu_0 \end{cases}$	$Z = \frac{\bar{X} - \mu_0}{S_c} \sqrt{n}$	$Z \leq -z_{\frac{\alpha}{2}} \quad \text{ó} \quad Z \geq z_{\frac{\alpha}{2}}$
$\begin{cases} H_0 : \mu = \mu_0 \\ H_1 : \mu < \mu_0 \end{cases}$	Distribución $\mathcal{N}(0, 1)$	$Z \leq -z_{\alpha}$
$\begin{cases} H_0 : \mu = \mu_0 \\ H_1 : \mu > \mu_0 \end{cases}$	$(n \geq 30)$	$Z \geq z_{\alpha}$

3. Contrastes sobre la varianza:

Hipótesis	Estadístico	Región crítica
$\begin{cases} H_0 : \sigma^2 = \sigma_0^2 \\ H_1 : \sigma^2 \neq \sigma_0^2 \end{cases}$	$Z = \frac{S_c - \sigma_0}{\sigma_0} \sqrt{2n}$	$Z \leq -z_{\frac{\alpha}{2}} \quad \text{ó} \quad Z \geq z_{\frac{\alpha}{2}}$
$\begin{cases} H_0 : \sigma^2 = \sigma_0^2 \\ H_1 : \sigma^2 < \sigma_0^2 \end{cases}$	Distribución $\mathcal{N}(0, 1)$	$Z \leq -z_{\alpha}$
$\begin{cases} H_0 : \sigma^2 = \sigma_0^2 \\ H_1 : \sigma^2 > \sigma_0^2 \end{cases}$	$(n \geq 30)$	$Z \geq z_{\alpha}$

4. Contrastes sobre la proporción:

Hipótesis	Estadístico	Región crítica
$\begin{cases} H_0 : p = p_0 \\ H_1 : p \neq p_0 \end{cases}$	$Z = \frac{\hat{p} - p_0}{\sqrt{\frac{p_0(1-p_0)}{n}}}$	$Z \leq -z_{\frac{\alpha}{2}} \quad \text{ó} \quad Z \geq z_{\frac{\alpha}{2}}$
$\begin{cases} H_0 : p = p_0 \\ H_1 : p < p_0 \end{cases}$	Distribución $\mathcal{N}(0, 1)$	$Z \leq -z_{\alpha}$
$\begin{cases} H_0 : p = p_0 \\ H_1 : p > p_0 \end{cases}$	$(np_0 \geq 5 \quad \text{y} \quad n(1-p_0) \geq 5)$ $(n \geq 30)$	$Z \geq z_{\alpha}$

Contrastes de hipótesis sobre los parámetros de dos poblaciones

1. Contrastes sobre diferencia de medias con varianzas conocidas:

Hipótesis	Estadístico	Región crítica
$\begin{cases} H_0 : \mu_1 - \mu_2 = \mu_0 \\ H_1 : \mu_1 - \mu_2 \neq \mu_0 \end{cases}$	$Z = \frac{\bar{X}_1 - \bar{X}_2 - \mu_0}{\sqrt{\frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}}}$	$Z \leq -z_{\frac{\alpha}{2}} \quad \text{ó} \quad Z \geq z_{\frac{\alpha}{2}}$
$\begin{cases} H_0 : \mu_1 - \mu_2 = \mu_0 \\ H_1 : \mu_1 - \mu_2 < \mu_0 \end{cases}$	Distribución $\mathcal{N}(0, 1)$	$Z \leq -z_\alpha$
$\begin{cases} H_0 : \mu_1 - \mu_2 = \mu_0 \\ H_1 : \mu_1 - \mu_2 > \mu_0 \end{cases}$	$(n_1, n_2 \geq 30)$	$Z \geq z_\alpha$

2. Contrastes sobre diferencia de medias con varianzas desconocidas:

Hipótesis	Estadístico	Región crítica
$\begin{cases} H_0 : \mu_1 - \mu_2 = \mu_0 \\ H_1 : \mu_1 - \mu_2 \neq \mu_0 \end{cases}$	$Z = \frac{\bar{X}_1 - \bar{X}_2 - \mu_0}{\sqrt{\frac{S_{c1}^2}{n_1} + \frac{S_{c2}^2}{n_2}}}$	$Z \leq -z_{\frac{\alpha}{2}} \quad \text{ó} \quad Z \geq z_{\frac{\alpha}{2}}$
$\begin{cases} H_0 : \mu_1 - \mu_2 = \mu_0 \\ H_1 : \mu_1 - \mu_2 < \mu_0 \end{cases}$	Distribución $\mathcal{N}(0, 1)$	$Z \leq -z_\alpha$
$\begin{cases} H_0 : \mu_1 - \mu_2 = \mu_0 \\ H_1 : \mu_1 - \mu_2 > \mu_0 \end{cases}$	$(n_1, n_2 \geq 30)$	$Z \geq z_\alpha$

3. Contrastes sobre igualdad de varianzas:

Hipótesis	Estadístico	Región crítica
$\begin{cases} H_0 : \sigma_1^2 = \sigma_2^2 \\ H_1 : \sigma_1^2 \neq \sigma_2^2 \end{cases}$	$Z = \frac{S_{c1} - S_{c2}}{S_p \sqrt{\frac{1}{2n_1} + \frac{1}{2n_2}}}$	$Z \leq -z_{\frac{\alpha}{2}} \quad \text{ó} \quad Z \geq z_{\frac{\alpha}{2}}$
$\begin{cases} H_0 : \sigma_1^2 = \sigma_2^2 \\ H_1 : \sigma_1^2 < \sigma_2^2 \end{cases}$	Distribución $\mathcal{N}(0, 1)$	$Z \leq -z_\alpha$
$\begin{cases} H_0 : \sigma_1^2 = \sigma_2^2 \\ H_1 : \sigma_1^2 > \sigma_2^2 \end{cases}$	$(n_1, n_2 \geq 30)$	$Z \geq z_\alpha$

4. Contrastes sobre diferencia de proporciones:

Hipótesis	Estadístico	Región crítica
$\begin{cases} H_0 : p_1 - p_2 = p_0 \\ H_1 : p_1 - p_2 \neq p_0 \end{cases}$	$Z = \frac{\hat{p}_1 - \hat{p}_2 - p_0}{\sqrt{\frac{\hat{p}_1(1 - \hat{p}_1)}{n_1} + \frac{\hat{p}_2(1 - \hat{p}_2)}{n_2}}}$	$Z \leq -z_{\frac{\alpha}{2}} \quad \text{ó} \quad Z \geq z_{\frac{\alpha}{2}}$
$\begin{cases} H_0 : p_1 - p_2 = p_0 \\ H_1 : p_1 - p_2 < p_0 \end{cases}$	Distribución $\mathcal{N}(0, 1)$	$Z \leq -z_\alpha$
$\begin{cases} H_0 : p_1 - p_2 = p_0 \\ H_1 : p_1 - p_2 > p_0 \end{cases}$	$\begin{aligned} &(n_1 \hat{p}_1 \geq 5 \quad \text{y} \quad n_1(1 - \hat{p}_1) \geq 5) \\ &(n_2 \hat{p}_2 \geq 5 \quad \text{y} \quad n_2(1 - \hat{p}_2) \geq 5) \\ &(n_1, n_2 \geq 30) \end{aligned}$	$Z \geq z_\alpha$

Análisis de regresión lineal simple. Formulario

Sumas de cuadrados y de productos

$$S_{xx} = \sum_{i=1}^n (x_i - \bar{x})^2 = \sum_{i=1}^n x_i^2 - n\bar{x}^2$$

$$S_{yy} = \sum_{i=1}^n (Y_i - \bar{Y})^2 = \sum_{i=1}^n Y_i^2 - n\bar{Y}^2$$

$$S_{xy} = \sum_{i=1}^n (x_i - \bar{x})(Y_i - \bar{Y}) = \sum_{i=1}^n x_i Y_i - n\bar{x}\bar{Y}$$

$$SSR = \sum_{i=1}^n (\hat{y}_i - \bar{Y})^2 = \frac{S_{xy}^2}{S_{xx}}$$

$$\widehat{SSE} = \sum_{i=1}^n (Y_i - \hat{y}_i)^2 = S_{yy} - \frac{S_{xy}^2}{S_{xx}}$$

Cartas de control. Formulario

Carta \bar{X}

$$\begin{aligned}
 \text{LSC} &= \hat{\mu} + A_2 \bar{R} \\
 \text{LC} &= \hat{\mu} \\
 \text{LIC} &= \hat{\mu} - A_2 \bar{R}
 \end{aligned}
 \quad
 \hat{\mu} = \frac{1}{m} \sum_{i=1}^m \bar{X}_i
 \quad
 \bar{R} = \frac{1}{m} \sum_{i=1}^m R_i
 \quad
 A_2 = \frac{3}{d_2 \sqrt{n}}$$

Carta R

$$\begin{aligned}
 \text{LSC} &= D_4 \bar{R} \\
 \text{LC} &= \bar{R} \\
 \text{LIC} &= D_3 \bar{R}
 \end{aligned}
 \quad
 D_4 = \left(1 + \frac{3\sigma_W}{d_2}\right)
 \quad
 D_3 = \left(1 - \frac{3\sigma_W}{d_2}\right)$$

Carta p

$$\begin{aligned}
 \text{LSC} &= \bar{p} + 3 \sqrt{\frac{\bar{p}(1-\bar{p})}{n}} \\
 \text{LC} &= \bar{p} \\
 \text{LIC} &= \bar{p} - 3 \sqrt{\frac{\bar{p}(1-\bar{p})}{n}}
 \end{aligned}
 \quad
 \bar{p} = \frac{1}{m} \sum_{i=1}^m \hat{p}_i = \frac{1}{m \cdot n} \sum_{i=1}^m D_i
 \quad
 \hat{p}_i = \frac{D_i}{n}$$

Carta C

$$\begin{aligned}
 \text{LSC} &= \bar{C} + 3 \sqrt{\bar{C}} \\
 \text{LC} &= \bar{C} \\
 \text{LIC} &= \bar{C} - 3 \sqrt{\bar{C}}
 \end{aligned}
 \quad
 \bar{C} = \frac{1}{m} \sum_{i=1}^m C_i$$

Carta U

$$\begin{aligned}
 \text{LSC} &= \bar{U} + 3 \sqrt{\frac{\bar{U}}{n}} \\
 \text{LC} &= \bar{U} \\
 \text{LIC} &= \bar{U} - 3 \sqrt{\frac{\bar{U}}{n}}
 \end{aligned}
 \quad
 \bar{U} = \frac{1}{m} \sum_{i=1}^m U_i
 \quad
 U_i = \frac{C_i}{n}$$