Tabela A3. Valores críticos da distribuição qui-quadrado para $\chi^2 \geq \chi^2_{\alpha,\nu}$ (a)(b)

ν \ α	.995	.975	.9	.5	.1	.05	.025	.01	.005	.001	α / ν
1	0.000	0.000	0.016	0.455	2.706	3.841	5.024	6.635	7.879	10.828	1
2	0.010	0.051	0.211	1.386	4.605	5.991	7.378	9.210	10.597	13.816	2
3	0.072	0.216	0.584	2.366	6.251	7.815	9.348	11.345	12.838	16.266	3
4	0.207	0.484	1.064	3.357	7.779	9.488	11.143	13.277	14.860	18.467	4
5	0.412	0.831	1.610	4.351	9.236	11.070	12.832	15.086	16.750	20.515	5
6	0.676	1.237	2.204	5.348	10.645	12.592	14.449	16.812	18.548	22.458	6
7	0.989	1.690	2.833	6.346	12.017	14.067	16.013	18.475	20.278	24.322	7
8	1.344	2.180	3.490	7.344	13.362	15.507	17.535	20.090	21.955	26.124	8
9	1.735	2.700	4.168	8.343	14.684	16.919	19.023	21.666	23.589	27.877	9
10	2.156	3.247	4.865	9.342	15.987	18.307	20.483	23.209	25.188	29.588	10
11	2.603	3.816	5.578	10.341	17.275	19.675	21.920	24.725	26.757	31.264	11
12	3.074	4.404	6.304	11.340	18.549	21.026	23.337	26.217	28.300	32.910	12
13	3.565	5.009	7.042	12.340	19.812	22.362	24.736	27.688	29.819	34.528	13
14	4.075	5.629	7.790	13.339	21.064	23.685	26.119	29.141	31.319	36.123	14
15	4.601	6.262	8.547	14.339	22.307	24.996	27.488	30.578	32.801	37.697	15
16	5.142	6.908	9.312	15.338	23.542	26.296	28.845	32.000	34.267	39.252	16
17	5.697	7.564	10.085	16.338	24.769	27.587	30.191	33.409	35.718	40.790	17
18	6.265	8.231	10.865	17.338	25.989	28.869	31.526	34.805	37.156	42.312	18
19	6.844	8.907	11.651	18.338	27.204	30.144	32.852	36.191	38.582	43.820	19
20	7.434	9.591	12.443	19.337	28.412	31.410	34.170	37.566	39.997	45.315	20
21	8.034	10.283	13.240	20.337	29.615	32.670	35.479	38.932	41.401	46.797	21
22	8.643	10.982	14.042	21.337	30.813	33.924	36.781	40.289	42.796	48.268	22
23	9.260	11.688	14.848	22.337	32.007	35.172	38.076	41.638	44.181	49.728	23
24	9.886	12.401	15.659	23.337	33.196	36.415	39.364	42.980	45.558	51.179	24
25	10.520	13.120	16.473	24.337	34.382	37.652	40.646	44.314	46.928	52.620	25
26	11.160	13.844	17.292	25.336	35.563	38.885	41.923	45.642	48.290	54.052	26
27	11.808	14.573	18.114	26.336	36.741	40.113	43.194	46.963	49.645	55.476	27
28	12.461	15.308	18.939	27.336	37.916	41.337	44.461	48.278	50.993	56.892	28
29	13.121	16.047	19.768	28.336	39.088	42.557	45.722	49.588	52.336	58.301	29
30	13.787	16.791	20.599	29.336	40.256	43.773	46.979	50.892	53.672	59.703	30
31	14.458	17.539	21.434	30.336	41.422	44.985	48.232	52.191	55.003	61.098	31
32	15.134	18.291	22.271	31.336	42.585	46.194	49.480	53.486	56.329	62.487	32
33	15.815	19.047	23.110	32.336	43.745	47.400	50.725	54.776	57.649	63.870	33
34	16.501	19.806	23.952	33.336	44.903	48.602	51.966	56.061	58.964	65.247	34
35	17.192	20.569	24.797	34.336	46.059	49.802	53.203	57.342	60.275	66.619	35
36	17.887	21.336	25.643	35.336	47.212	50.998	54.437	58.619	61.582	67.985	36
37	18.586	22.106	26.492	36.335	48.363	52.192	55.668	59.892	62.884	69.346	37
38	19.289	22.878	27.343	37.335	49.513	53.384	56.896	61.162	64.182	70.703	38
39	19.996	23.654	28.196	38.335	50.660	54.572	58.120	62.428	65.476	72.055	39
40	20.707	24.433	29.051	39.335	51.805	55.758	59.342	63.691	66.766	73.402	40
41	21.421	25.215	29.907	40.335	52.949	56.942	60.561	64.950	68.053	74.745	41
42	22.138	25.999	30.765	41.335	54.090	58.124	61.777	66.206	69.336	76.084	42
43	22.859	26.785	31.625	42.335	55.230	59.304	62.990	67.459	70.616	77.419	43
44	23.584	27.575	32.487	43.335	56.369	60.481	64.202	68.710	71.893	78.750	44
45	24.311	28.366	33.350	44.335	57.505	61.656	65.410	69.957	73.166	80.077	45
46	25.042	29.160	34.215	45.335	58.641	62.830	66.617	71.201	74.437	81.400	46
47	25.775	29.956	35.081	46.335	59.774	64.001	67.821	72.443	75.704	82.720	47
48	26.511	30.755	35.949	47.335	60.907	65.171	69.023	73.683	76.969	84.037	48
49	27.249	31.555	36.818	48.335	62.038	66.339	70.222	74.919	78.231	85.351	49
50	27.991	32.357	37.689	49.335	63.167	67.505	71.420	76.154	79.490	86.661	50

continuação...

ν \ α	.995	.975	.9	.5	.1	.05	.025	.01	.005	.001	α / ν
51	28.735	33.162	38.560	50.335	64.295	68.669	72.616	77.386	80.747	87.968	51
52	29.481	33.968	39.433	51.335	65.422	69.832	73.810	78.616	82.001	89.272	52
53	30.230	34.776	40.308	52.335	66.548	70.993	75.002	79.843	83.253	90.573	53
54	30.981	35.586	41.183	53.335	67.673	72.153	76.192	81.069	84.502	91.872	54
55	31.735	36.398	42.060	54.335	68.796	73.311	77.380	82.292	85.749	93.168	55
56	32.490	37.212	42.937	55.335	69.918	74.468	78.567	83.513	86.994	94.460	56
57	33.248	38.027	43.816	56.335	71.040	75.624	79.752	84.733	88.237	95.751	57
58	34.008	38.844	44.696	57.335	72.160	76.778	80.936	85.950	89.477	97.039	58
59	34.770	39.662	45.577	58.335	73.279	77.931	82.117	87.166	90.715	98.324	59
60	35.534	40.482	46.459	59.335	74.397	79.082	83.298	88.379	91.952	99.607	60
61	36.300	41.303	47.342	60.335	75.514	80.232	84.476	89.591	93.186	100.888	61
62	37.068	42.126	48.226	61.335	76.630	81.381	85.654	90.802	94.419	102.166	62
63	37.838	42.950	49.111	62.335	77.745	82.529	86.830	92.010	95.649	103.442	63
64	38.610	43.776	49.996	63.335	78.860	83.675	88.004	93.217	96.878	104.716	64
65	39.383	44.603	50.883	64.335	79.973	84.821	89.177	94.422	98.105	105.988	65
66	40.158	45.431	51.770	65.335	81.085	85.965	90.349	95.626	99.331	107.258	66
67	40.935	46.261	52.659	66.335	82.197	87.108	91.519	96.828	100.55	108.526	67
68	41.713	47.092	53.548	67.334	83.308	88.250	92.689	98.028	101.78	109.791	68
69	42.494	47.924	54.438	68.334	84.418	89.391	93.856	99.228	103.00	111.055	69
70	43.275	48.758	55.329	69.334	85.527	90.531	95.023	100.43	104.21	112.317	70
71	44.058	49.592	56.221	70.334	86.635	91.670	96.189	101.62	105.43	113.577	71
72	44.843	50.428	57.113	71.334	87.743	92.808	97.353	102.82	106.65	114.835	72
73	45.629	51.265	58.006	72.334	88.850	93.945	98.516	104.01	107.86	116.092	73
74	46.417	52.103	58.900	73.334	89.956	95.081	99.678	105.20	109.07	117.346	74
75	47.206	52.942	59.795	74.334	91.061	96.217	100.84	106.39	110.29	118.599	75
76	47.997	53.782	60.690	75.334	92.166	97.351	102.00	107.58	111.50	119.850	76
77	48.788	54.623	61.586	76.334	93.270	98.484	103.16	108.77	112.70	121.100	77
78	49.582	55.466	62.483	77.334	94.373	99.617	104.32	109.96	113.91	122.348	78
79	50.376	56.309	63.380	78.334	95.476	100.75	105.47	111.14	115.12	123.594	79
80	51.172	57.153	64.278	79.334	96.578	101.88	106.63	112.33	116.32	124.839	80
81	51.969	57.998	65.176	80.334	97.680	103.01	107.78	113.51	117.52	126.082	81
82	52.767	58.845	66.076	81.334	98.780	104.14	108.94	114.69	118.73	127.324	82
83	53.567	59.692	66.976	82.334	99.880	105.27	110.09	115.88	119.93	128.565	83
84	54.368	60.540	67.876	83.334	100.98	106.39	111.24	117.06	121.13	129.804	84
85	55.170	61.389	68.777	84.334	102.08	107.52	112.39	118.24	122.32	131.041	85
86	55.973	62.239	69.679	85.334	103.18	108.65	113.54	119.41	123.52	132.277	86
87	56.777	63.089	70.581	86.334	104.28	109.77	114.69	120.59	124.72	133.512	87
88	57.582	63.941	71.484	87.334	105.37	110.90	115.84	121.77	125.91	134.745	88
89	58.389	64.793	72.387	88.334	106.47	112.02	116.99	122.94	127.11	135.978	89
90	59.196	65.647	73.291	89.334	107.56	113.15	118.14	124.12	128.30	137.208	90
91	60.005	66.501	74.196	90.334	108.66	114.27	119.28	125.29	129.49	138.438	91
92	60.815	67.356	75.101	91.334	109.76	115.39	120.43	126.46	130.68	139.666	92
93	61.625	68.211	76.006	92.334	110.85	116.51	121.57	127.63	131.87	140.893	93
94	62.437	69.068	76.912	93.334	111.94	117.63	122.72	128.80	133.06	142.119	94
95	63.250	69.925	77.818	94.334	113.04	118.75	123.86	129.97	134.25	143.344	95
96	64.063	70.783	78.725	95.334	114.13	119.87	125.00	131.14	135.43	144.567	96
97	64.878	71.642	79.633	96.334	115.22	120.99	126.14	132.31	136.62	145.789	97
98	65.694	72.501	80.541	97.334	116.32	122.11	127.28	133.48	137.80	147.010	98
99	66.510	73.361	81.449	98.334	117.41	123.23	128.42	134.64	138.99	148.230	99
100	67.328	74.222	82.358	99.334	118.50	124.34	129.56	135.81	140.17	149.449	100

(a) Reproduzido e adaptado de Rohlf e Sokal (1995); (b) α : significância estabelecida e ν: graus de liberdade.

Tabela A4. Valores críticos da distribuição F de Snedecor $F \geq F_{\alpha;\nu_1,\nu_2}$, a 0,05 de significância[a][b]

GL	V1																				
V2	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	20	40	60	120	240
1	161.4	199.5	215.7	224.6	230.2	234.0	236.8	238.9	240.5	241.9	243.0	243.9	244.7	245.4	245.9	248.0	251.1	252.2	253.3	253.8
2	18.513	19.000	19.164	19.247	19.296	19.329	19.353	19.371	19.386	19.396	19.405	19.412	19.419	19.424	19.429	19.446	19.471	19.479	19.487	19.492
3	10.128	9.552	9.277	9.117	9.013	8.941	8.887	8.845	8.812	8.785	8.763	8.745	8.729	8.715	8.703	8.660	8.594	8.572	8.549	8.538
4	7.709	6.944	6.591	6.388	6.256	6.163	6.094	6.041	5.999	5.964	5.936	5.912	5.891	5.873	5.858	5.803	5.717	5.688	5.658	5.643
5	6.608	5.786	5.409	5.192	5.050	4.950	4.876	4.818	4.772	4.735	4.704	4.678	4.655	4.636	4.619	4.558	4.464	4.431	4.398	4.382
6	5.987	5.143	4.757	4.534	4.387	4.284	4.207	4.147	4.099	4.060	4.027	4.000	3.976	3.956	3.938	3.874	3.774	3.740	3.705	3.687
7	5.591	4.737	4.347	4.120	3.972	3.866	3.787	3.726	3.677	3.637	3.603	3.575	3.550	3.529	3.511	3.445	3.340	3.304	3.267	3.249
8	5.318	4.459	4.066	3.838	3.688	3.581	3.500	3.438	3.388	3.347	3.313	3.284	3.259	3.237	3.218	3.150	3.043	3.005	2.967	2.947
9	5.117	4.256	3.863	3.633	3.482	3.374	3.293	3.230	3.179	3.137	3.102	3.073	3.048	3.025	3.006	2.936	2.826	2.787	2.748	2.727
10	4.965	4.103	3.708	3.478	3.326	3.217	3.135	3.072	3.020	2.978	2.943	2.913	2.887	2.865	2.845	2.774	2.661	2.621	2.580	2.559
11	4.844	3.982	3.587	3.357	3.204	3.095	3.012	2.948	2.896	2.854	2.818	2.788	2.761	2.739	2.719	2.646	2.531	2.490	2.448	2.426
12	4.747	3.885	3.490	3.259	3.106	2.996	2.913	2.849	2.796	2.753	2.717	2.687	2.660	2.637	2.617	2.544	2.426	2.384	2.341	2.319
13	4.667	3.806	3.411	3.179	3.025	2.915	2.832	2.767	2.714	2.671	2.635	2.604	2.577	2.554	2.533	2.459	2.339	2.297	2.252	2.220
14	4.600	3.739	3.344	3.112	2.958	2.848	2.764	2.699	2.646	2.602	2.565	2.534	2.507	2.484	2.463	2.388	2.266	2.223	2.178	2.155
15	4.543	3.682	3.287	3.056	2.901	2.790	2.707	2.641	2.588	2.544	2.507	2.475	2.448	2.424	2.403	2.328	2.204	2.160	2.114	2.090
16	4.494	3.634	3.239	3.007	2.852	2.741	2.657	2.591	2.538	2.494	2.456	2.425	2.397	2.373	2.352	2.276	2.151	2.106	2.059	2.035
17	4.451	3.592	3.197	2.965	2.810	2.699	2.614	2.548	2.494	2.450	2.413	2.381	2.353	2.329	2.308	2.230	2.104	2.058	2.011	1.986
18	4.414	3.555	3.160	2.928	2.773	2.661	2.577	2.510	2.456	2.412	2.374	2.342	2.314	2.290	2.269	2.191	2.063	2.017	1.968	1.943
19	4.381	3.522	3.127	2.895	2.740	2.628	2.544	2.477	2.423	2.378	2.340	2.308	2.280	2.256	2.234	2.155	2.026	1.980	1.930	1.905
20	4.351	3.493	3.098	2.866	2.711	2.599	2.514	2.447	2.393	2.348	2.310	2.278	2.250	2.225	2.203	2.124	1.994	1.946	1.896	1.870
21	4.325	3.467	3.072	2.840	2.685	2.573	2.488	2.420	2.366	2.321	2.283	2.250	2.222	2.197	2.176	2.096	1.965	1.916	1.866	1.839
22	4.301	3.443	3.049	2.817	2.661	2.549	2.464	2.397	2.342	2.297	2.259	2.226	2.198	2.173	2.151	2.071	1.938	1.889	1.838	1.811
23	4.279	3.422	3.028	2.796	2.640	2.528	2.442	2.375	2.320	2.275	2.236	2.204	2.175	2.150	2.128	2.048	1.914	1.865	1.813	1.785
24	4.260	3.403	3.009	2.776	2.621	2.508	2.423	2.355	2.300	2.255	2.216	2.183	2.155	2.130	2.108	2.027	1.892	1.842	1.790	1.762
25	4.242	3.385	2.991	2.759	2.603	2.490	2.405	2.337	2.282	2.236	2.198	2.165	2.136	2.111	2.089	2.007	1.872	1.822	1.768	1.740
26	4.225	3.369	2.975	2.743	2.587	2.474	2.388	2.321	2.265	2.220	2.181	2.148	2.119	2.094	2.072	1.990	1.853	1.803	1.749	1.720
27	4.210	3.354	2.960	2.728	2.572	2.459	2.373	2.305	2.250	2.204	2.166	2.132	2.103	2.078	2.056	1.974	1.836	1.785	1.731	1.702
28	4.196	3.340	2.947	2.714	2.558	2.445	2.359	2.291	2.236	2.190	2.151	2.118	2.089	2.064	2.041	1.959	1.820	1.769	1.714	1.685
29	4.183	3.328	2.934	2.701	2.545	2.432	2.346	2.278	2.223	2.177	2.138	2.104	2.075	2.050	2.027	1.945	1.806	1.754	1.698	1.668
30	4.171	3.316	2.922	2.690	2.534	2.421	2.334	2.266	2.211	2.165	2.126	2.092	2.063	2.037	2.015	1.932	1.792	1.740	1.683	1.654
40	4.085	3.232	2.839	2.606	2.449	2.336	2.249	2.180	2.124	2.077	2.038	2.003	1.974	1.948	1.924	1.839	1.693	1.637	1.577	1.544
50	4.034	3.183	2.790	2.557	2.400	2.286	2.199	2.130	2.073	2.026	1.986	1.952	1.921	1.895	1.871	1.784	1.634	1.576	1.511	1.476
60	4.001	3.150	2.758	2.525	2.368	2.254	2.167	2.097	2.040	1.993	1.952	1.917	1.887	1.860	1.836	1.748	1.594	1.534	1.467	1.430
80	3.960	3.111	2.719	2.486	2.329	2.214	2.126	2.056	1.999	1.951	1.910	1.875	1.845	1.817	1.793	1.703	1.545	1.482	1.411	1.370
100	3.936	3.087	2.696	2.463	2.305	2.191	2.103	2.032	1.975	1.927	1.885	1.850	1.819	1.792	1.768	1.676	1.515	1.450	1.376	1.333
120	3.920	3.072	2.680	2.447	2.290	2.175	2.087	2.016	1.959	1.910	1.869	1.834	1.803	1.775	1.750	1.659	1.495	1.429	1.352	1.307
240	3.881	3.033	2.642	2.409	2.252	2.136	2.048	1.977	1.919	1.870	1.829	1.793	1.761	1.733	1.708	1.614	1.445	1.375	1.290	1.237

(a) Reproduzido e adaptado de Rohlf e Sokal (1995); (b) α: significância estabelecida; ν_1 e ν_2: graus de liberdade (GL).

Tabela A5. Números aleatórios[a]

	1	2	3	4	5	6	7	8	9	10	
51	58237	81333	12573	36181	84900	39614	61303	05086	97670	07961	51
52	54789	75554	36795	42649	02971	97584	38223	52643	25027	56849	52
53	55373	14272	62729	25659	84359	02654	08409	52703	88803	31919	53
54	74251	66100	10773	71393	80972	45092	07932	83065	06585	16454	54
55	86077	90904	14779	75116	50267	52217	08539	08345	52750	22815	55
56	13506	84170	08716	28894	20133	99489	87768	55582	96081	20774	
57	13226	41411	16074	15438	68840	17064	96917	25404	47708	17861	56
58	01642	25456	69804	29277	99473	07912	90488	73325	88266	18082	57
59	23715	70933	37381	20388	34929	96585	14146	81617	36664	25060	58
60	98436	61100	45346	94664	30677	18677	99524	70767	39525	34023	59
61	96571	81879	50387	77316	18874	00763	99457	70858	79674	95618	60
62	70677	59632	22985	95166	54904	61995	63423	65335	13807	96638	61
63	33725	31717	04704	13669	91697	00107	33667	24770	60044	49107	62
64	40910	75631	56653	42858	85768	21254	01295	21507	33687	02404	63
65	67947	27522	14066	14943	19696	93933	52432	90569	14856	30580	64
66	41797	38840	68744	59348	05120	30184	35212	14348	37661	51451	65
67	41770	94218	52578	36238	40575	16793	77152	23382	11570	87276	66
68	34918	50080	97862	84932	57596	33749	78745	73377	72328	63074	67
69	47898	91359	10606	33735	46812	96239	23815	36757	17882	96143	68
70	45021	03882	94463	96369	56001	16348	89408	84563	66422	62636	69
71	92752	67479	72696	20645	78439	11224	17405	27884	15573	12490	70
72	13229	29631	01944	76916	30063	98507	11345	29576	20215	53972	71
73	39111	13161	85208	70273	24016	04960	46728	60292	24831	06403	72
74	50972	92325	72258	57577	32886	56062	62370	99461	64680	38080	73
75	08190	28700	87859	03684	83762	03810	12325	75445	41946	36420	74
76	98140	55201	89156	99277	78211	78692	96992	80163	67882	36674	75
77	14110	02500	54140	43371	06930	26853	56025	73530	97542	19287	76
78	35106	03726	35458	69204	47084	22676	62125	66443	73712	82879	77
79	04446	93672	24118	40460	79678	51259	37345	49666	08518	04251	78
80	42890	46488	42713	76138	82275	59529	98821	60243	51840	02294	79
81	64856	84896	77627	86920	59181	24162	34918	77203	55518	17174	80
82	29739	02885	14169	81125	59048	59396	35494	25220	91424	94750	81
83	70750	97663	18316	16741	75016	01404	78331	76908	68195	18714	82
84	28695	56066	21108	23021	31950	37840	33674	81877	92490	35488	83
85	58892	85844	04181	58470	13348	64277	43838	50362	08531	83388	84
86	79508	78596	96537	20553	41148	37805	14553	09919	11490	70231	85
87	13617	66975	68598	95450	06285	84134	62474	22329	82134	08283	86
88	15123	55351	28631	77941	90178	35876	27833	92494	88899	41558	87
89	34604	18686	05179	31756	47258	14945	98839	82051	86608	07022	88
90	51863	00432	27846	54577	84476	06652	88250	40187	29735	32621	89
91	65489	54535	60256	91285	81743	48426	58351	89166	52478	23935	90
92	86119	57900	04979	16358	06281	25469	02454	20658	08869	29293	91
93	01963	62421	86788	54260	61287	69893	56446	11608	04760	85532	92
94	52164	39397	60568	88382	01561	78861	02849	31033	76875	08260	93
95	91444	35684	80387	44827	71027	16850	04079	02394	49058	60509	94
96	09881	00351	14759	58624	50470	03348	23703	10959	39733	84954	95
97	09045	29309	17864	27687	21691	59354	56599	99735	57626	55645	96
98	13036	51186	32490	45564	53813	25529	66293	50352	41356	44697	97
99	96114	75971	70563	31203	85747	86469	78133	40310	48223	85933	98
100	47657	02006	33820	89370	60192	08248	10221	27754	31323	59019	99
											100