

## *E* Distribution Tables

Tables 1, 2 and 3 on the next few pages contain commonly used critical values for *E* distributions with  $k \leq 3$  and  $n \leq 80$ . Values for each *E* distribution are estimated using a large random sample ( $n = 10^5$ ) from the distribution.

These tables are posted here for those who are interested in using the *E* calibration for empirical likelihood inference. Details of the estimation methods will be available in a forthcoming paper on estimating the *E* distributions.

**Table 1:** Critical values of the  $E_{1,n}$  distributions for  $2 \leq n \leq 40$ .

$n \setminus \alpha$	0.50	0.40	0.30	0.20	0.15	0.10	0.05	0.025	0.01	0.005
2	$+\infty$	$+\infty$	$+\infty$	$+\infty$	$+\infty$	$+\infty$	$+\infty$	$+\infty$	$+\infty$	$+\infty$
3	1.15435	2.20054	5.3263	$+\infty$	$+\infty$	$+\infty$	$+\infty$	$+\infty$	$+\infty$	$+\infty$
4	0.82508	1.41542	2.5063	5.3230	10.3709	$+\infty$	$+\infty$	$+\infty$	$+\infty$	$+\infty$
5	0.70262	1.15857	1.9237	3.4615	5.0999	9.0952	$+\infty$	$+\infty$	$+\infty$	$+\infty$
6	0.64239	1.03976	1.6818	2.8686	3.9807	6.1316	13.7970	$+\infty$	$+\infty$	$+\infty$
7	0.60570	0.96942	1.5339	2.5372	3.4172	4.9797	9.0979	18.4081	$+\infty$	$+\infty$
8	0.57776	0.92033	1.4417	2.3465	3.1141	4.4111	7.5352	12.6930	33.0087	$+\infty$
9	0.56203	0.89202	1.3911	2.2341	2.9294	4.0778	6.6374	10.3607	19.3925	40.5807
10	0.54822 <sup>†</sup>	0.86374	1.3455	2.1366	2.7855	3.8277	6.0546	9.0451	15.1348	23.7347
11	0.53699	0.84507	1.3071	2.0565	2.6699	3.6435	5.6643	8.2482	13.1540	18.8074
12	0.52816	0.82926	1.2790	2.0131	2.6042	3.5298	5.3873	7.7441	11.9931	16.4582
13	0.52105	0.81847	1.2610	1.9726	2.5358	3.4141	5.1671	7.3186	10.8952	14.4280
14	0.51520	0.81356	1.2484	1.9420	2.4887	3.3438	5.0312	7.0488	10.3447	13.4783
15	0.51030	0.80060	1.2261	1.9124	2.4489	3.2744	4.8878	6.7880	9.8519	12.8604
16	0.50614	0.79141	1.2108	1.8776	2.4013	3.2052	4.7622	6.5554	9.4862	12.0209
17	0.50256	0.78585	1.2000	1.8589	2.3775	3.1667	4.6535	6.3996	9.0711	11.5513
18	0.49945	0.78184	1.1956	1.8482	2.3578	3.1301	4.5894	6.2671	8.8179	11.0163
19	0.49672	0.77589	1.1836	1.8309	2.3370	3.0912	4.5331	6.1665	8.6382	10.8121
20	0.49430	0.77402 <sup>†</sup>	1.1780	1.8203	2.3169	3.0670	4.4764	6.0621	8.4542	10.4933
21	0.49215	0.77014	1.1754	1.8099	2.3069	3.0481	4.4347	5.9828	8.2966	10.3208
22	0.49022	0.76670	1.1660	1.8006	2.2880	3.0293	4.4038	5.9038	8.1180	10.0456
23	0.48848	0.76362	1.1644	1.7955	2.2761	3.0011	4.3370	5.8255	8.0513	9.9011
24	0.48691	0.76085	1.1532	1.7753	2.2592	2.9785	4.3166	5.7755	7.9402	9.7823
25	0.48548	0.75834	1.1515	1.7746	2.2543	2.9674	4.2885	5.7499	7.8699	9.5869
26	0.48417	0.75606	1.1486	1.7702	2.2421	2.9571	4.2671	5.7138	7.8058	9.5137
27	0.48296	0.75398	1.1480	1.7659	2.2354	2.9413	4.2462	5.6720	7.7065	9.3891
28	0.48185	0.75208	1.1461	1.7611	2.2302	2.9370	4.2302	5.6342	7.6675	9.3496
29	0.48083	0.75032	1.1440	1.7538	2.2211	2.9225	4.2182	5.6069	7.6009	9.2238
30	0.47988	0.74870	1.1402 <sup>†</sup>	1.7516 <sup>†</sup>	2.2197 <sup>†</sup>	2.9187 <sup>†</sup>	4.2003 <sup>†</sup>	5.5808 <sup>†</sup>	7.5224	9.1873
31	0.47900	0.74721	1.1375	1.7468	2.2128	2.9078	4.1796	5.5455	7.4926	9.0988
32	0.47818	0.74581	1.1350	1.7423	2.2064	2.8979	4.1612	5.5144	7.4591	9.0788
33	0.47741	0.74452	1.1327	1.7383	2.2006	2.8890	4.1447	5.4868	7.3804	8.9336
34	0.47669	0.74331	1.1306	1.7346	2.1953	2.8809	4.1298	5.4622	7.3334	8.8837
35	0.47602	0.74218	1.1286	1.7311	2.1904	2.8734	4.1163	5.4400	7.3223	8.8374
36	0.47539	0.74112	1.1267	1.7279	2.1858	2.8666	4.1040	5.4200	7.3196	8.7915
37	0.47479	0.74013	1.1250	1.7249	2.1816	2.8602	4.0928	5.4018	7.2797	8.7436
38	0.47423	0.73919	1.1234	1.7221	2.1777	2.8544	4.0825	5.3852	7.2178	8.7044
39	0.47370	0.73831	1.1218	1.7195	2.1741	2.8490	4.0730	5.3700	7.2135	8.6676
40	0.47319	0.73747	1.1204	1.7171	2.1707	2.8440	4.0642	5.3561	7.2107 <sup>†</sup>	8.6076
$\chi_1^2$	0.45494	0.70833	1.0742	1.6424	2.0723	2.7055	3.8415	5.0239	6.6349	7.8794

**Table 1 Cont'ed:** Critical values of the  $E_{1,n}$  distributions for  $41 \leq n \leq 80$ .

$n \backslash \alpha$	0.50	0.40	0.30	0.20	0.15	0.10	0.05	0.025	0.01	0.005
41	0.47272	0.73668	1.1191	1.7148	2.1676	2.8393	4.0561	5.3432	7.1829	8.5827
42	0.47227	0.73594	1.1178	1.7127	2.1646	2.8349	4.0485	5.3312	7.1576	8.5647
43	0.47184	0.73523	1.1166	1.7106	2.1618	2.8308	4.0414	5.3202	7.1345	8.5369
44	0.47143	0.73455	1.1155	1.7087	2.1592	2.8270	4.0349	5.3099	7.1134	8.5148
45	0.47104	0.73391	1.1144	1.7069	2.1567	2.8233	4.0287	5.3003	7.0940	8.5086
46	0.47066	0.73330	1.1134	1.7052	2.1544	2.8199	4.0229	5.2913	7.0761	8.4842
47	0.47031	0.73272	1.1124	1.7036	2.1522	2.8167	4.0175	5.2829	7.0596	8.4758
48	0.46997	0.73217	1.1115	1.7020	2.1501	2.8137	4.0123	5.2750	7.0442	8.4623
49	0.46965	0.73164	1.1106	1.7006	2.1481	2.8108	4.0075	5.2676	7.0299	8.4511
50	0.46933	0.73113	1.1098	1.6992	2.1462	2.8080	4.0030	5.2606	7.0166	8.4490 <sup>†</sup>
51	0.46904	0.73064	1.1090	1.6978	2.1444	2.8054	3.9986	5.2539	7.0042	8.4260
52	0.46875	0.73018	1.1082	1.6966	2.1427	2.8030	3.9945	5.2477	6.9925	8.4048
53	0.46848	0.72973	1.1075	1.6954	2.1410	2.8006	3.9906	5.2418	6.9816	8.3852
54	0.46821	0.72930	1.1068	1.6942	2.1395	2.7984	3.9869	5.2361	6.9713	8.3670
55	0.46796	0.72889	1.1061	1.6931	2.1380	2.7963	3.9834	5.2308	6.9616	8.3501
56	0.46771	0.72850	1.1054	1.6920	2.1366	2.7942	3.9801	5.2257	6.9524	8.3343
57	0.46748	0.72811	1.1048	1.6910	2.1352	2.7923	3.9769	5.2209	6.9437	8.3195
58	0.46725	0.72775	1.1042	1.6900	2.1339	2.7904	3.9738	5.2163	6.9355	8.3057
59	0.46703	0.72739	1.1037	1.6891	2.1326	2.7886	3.9709	5.2119	6.9278	8.2927
60	0.46682	0.72705	1.1031	1.6882	2.1314	2.7869	3.9681	5.2077	6.9204	8.2804
61	0.46662	0.72673	1.1026	1.6873	2.1303	2.7853	3.9654	5.2037	6.9134	8.2689
62	0.46642	0.72641	1.1021	1.6865	2.1291	2.7837	3.9629	5.1998	6.9067	8.2580
63	0.46623	0.72610	1.1016	1.6857	2.1281	2.7822	3.9604	5.1962	6.9003	8.2477
64	0.46605	0.72580	1.1011	1.6849	2.1270	2.7807	3.9581	5.1926	6.8942	8.2380
65	0.46587	0.72552	1.1006	1.6841	2.1260	2.7793	3.9558	5.1892	6.8884	8.2287
66	0.46570	0.72524	1.1002	1.6834	2.1251	2.7780	3.9536	5.1860	6.8829	8.2200
67	0.46553	0.72497	1.0998	1.6827	2.1242	2.7767	3.9515	5.1829	6.8775	8.2116
68	0.46537	0.72471	1.0993	1.6820	2.1233	2.7754	3.9495	5.1798	6.8725	8.2037
69	0.46521	0.72446	1.0989	1.6814	2.1224	2.7742	3.9475	5.1769	6.8676	8.1961
70	0.46506	0.72421	1.0985	1.6808	2.1216	2.7730	3.9456	5.1741	6.8629	8.1889
71	0.46491	0.72398	1.0982	1.6801	2.1208	2.7719	3.9438	5.1715	6.8584	8.1819
72	0.46476	0.72375	1.0978	1.6795	2.1200	2.7708	3.9421	5.1689	6.8541	8.1753
73	0.46462	0.72352	1.0974	1.6790	2.1192	2.7697	3.9404	5.1663	6.8499	8.1690
74	0.46449	0.72331	1.0971	1.6784	2.1185	2.7687	3.9387	5.1639	6.8459	8.1630
75	0.46436	0.72309	1.0968	1.6779	2.1178	2.7677	3.9372	5.1616	6.8420	8.1571
76	0.46423	0.72289	1.0964	1.6774	2.1171	2.7667	3.9356	5.1593	6.8383	8.1516
77	0.46410	0.72269	1.0961	1.6768	2.1164	2.7658	3.9341	5.1571	6.8347	8.1462
78	0.46398	0.72250	1.0958	1.6763	2.1158	2.7649	3.9327	5.1550	6.8313	8.1411
79	0.46386	0.72231	1.0955	1.6759	2.1151	2.7640	3.9313	5.1529	6.8279	8.1361
80	0.46375	0.72212	1.0952	1.6754	2.1145	2.7632	3.9299	5.1510	6.8247	8.1313
$\chi_1^2$	0.45494	0.70833	1.0742	1.6424	2.0723	2.7055	3.8415	5.0239	6.6349	7.8794

**Table 2:** Critical values of the  $E_{2,n}$  distributions for  $3 \leq n \leq 40$ .

$n \setminus \alpha$	0.50	0.40	0.30	0.20	0.15	0.10	0.05	0.025	0.01	0.005
3	$+\infty$	$+\infty$	$+\infty$	$+\infty$	$+\infty$	$+\infty$	$+\infty$	$+\infty$	$+\infty$	$+\infty$
4	$+\infty$	$+\infty$	$+\infty$	$+\infty$	$+\infty$	$+\infty$	$+\infty$	$+\infty$	$+\infty$	$+\infty$
5	4.0056	7.3672	$+\infty$	$+\infty$	$+\infty$	$+\infty$	$+\infty$	$+\infty$	$+\infty$	$+\infty$
6	2.9122	4.4815	7.6253	22.5449	$+\infty$	$+\infty$	$+\infty$	$+\infty$	$+\infty$	$+\infty$
7	2.4488	3.5539	5.4165	9.5282	15.1740	$+\infty$	$+\infty$	$+\infty$	$+\infty$	$+\infty$
8	2.1931	3.1133	4.5318	7.2136	9.9497	16.3802	$+\infty$	$+\infty$	$+\infty$	$+\infty$
9	2.0380	2.8501	4.0317	6.1119	7.9957	11.6074	24.6861	$+\infty$	$+\infty$	$+\infty$
10	1.9340	2.6612	3.7201	5.4859	7.0033	9.6626	16.8248	36.0744	$+\infty$	$+\infty$
11	1.8477	2.5240	3.4892	5.0480	6.3344	8.4847	13.6590	22.6916	$+\infty$	$+\infty$
12	1.7940	2.4419	3.3456	4.7711	5.9116	7.7691	11.8844	18.1281	35.702	$+\infty$
13	1.7441	2.3644	3.2198	4.5477	5.5945	7.2512	10.7812	15.6592	26.338	44.964
14	1.7055	2.3047	3.1206	4.3781	5.3618	6.8776	10.0215	14.1046	22.341	32.630
15	1.6812	2.2624	3.0494	4.2496	5.1679	6.5977	9.4316	12.9964	19.410	26.719
16	1.6571	2.2235	2.9944	4.1501	5.0388	6.3693	8.9827	12.1374	17.783	23.683
17	1.6308	2.1890	2.9377	4.0513	4.8962	6.1742	8.6329	11.5651	16.514	21.424
18	1.6097	2.1587	2.8855	3.9777	4.7860	6.0126	8.3349	11.0708	15.530	19.762
19	1.5989	2.1398	2.8548	3.9191	4.7035	5.8913	8.1220	10.7027	14.809	18.656
20	1.5800	2.1114	2.8154	3.8533	4.6280	5.7704	7.9383	10.3495	14.179	17.662
21	1.5687	2.0948	2.7916	3.8128	4.5750	5.6944	7.7759	10.1286	13.793	17.059
22	1.5631	2.0836	2.7713	3.7714	4.5117	5.6034	7.6259	9.8773	13.307	16.229
23	1.5495	2.0683	2.7468	3.7355	4.4671	5.5353	7.5012	9.6681	12.883	15.781
24	1.5444	2.0559	2.7278	3.7034	4.4184	5.4778	7.3812	9.4788	12.585	15.294
25	1.5340	2.0457	2.7125	3.6806	4.3910	5.4170	7.2865	9.3481	12.370	15.024
26	1.5235	2.0259	2.6901	3.6495	4.3509	5.3765	7.2145	9.1973	12.092	14.481
27	1.5190	2.0210	2.6741	3.6249	4.3187	5.3253	7.1492	9.0862	11.903	14.281
28	1.5125	2.0115	2.6626	3.5979	4.2817	5.2645	7.0374	8.9375	11.698	14.009
29	1.5048	2.0004	2.6525	3.5880	4.2560	5.2327	6.9817	8.8521	11.574	13.810
30	1.5027 <sup>†</sup>	1.9961	2.6428	3.5649	4.2288	5.2128	6.9570	8.8135	11.462	13.705
31	1.4979	1.9841	2.6311	3.5479	4.2158	5.1837	6.9004	8.7030	11.287	13.435
32	1.4935	1.9827	2.6226	3.5321	4.1921	5.1555	6.8408	8.6229	11.157	13.224
33	1.4894	1.9738	2.6115	3.5240	4.1816	5.1210	6.7850	8.5597	11.047	13.076
34	1.4856	1.9711	2.6069	3.5061	4.1644	5.0925	6.7420	8.4672	10.956	12.969
35	1.4821	1.9663	2.5960	3.4988	4.1435	5.0647	6.7099	8.4320	10.877	12.816
36	1.4789	1.9573	2.5896	3.4875	4.1321	5.0583	6.6927	8.3980	10.795	12.682
37	1.4758	1.9561	2.5820	3.4771	4.1233	5.0357	6.6651	8.3594	10.705	12.596
38	1.4730	1.9505	2.5757	3.4701	4.1154	5.0251	6.6463	8.3108	10.628	12.558
39	1.4703	1.9485	2.5717	3.4629	4.1024	5.0016	6.6104	8.2702	10.556	12.372
40	1.4678	1.9464 <sup>†</sup>	2.5686 <sup>†</sup>	3.4571 <sup>†</sup>	4.0934 <sup>†</sup>	4.9761	6.5887	8.2465	10.474	12.261
$\chi_2^2$	1.3863	1.8326	2.4079	3.2189	3.7942	4.6052	5.9915	7.3778	9.2103	10.597

**Table 2 Cont'ed:** Critical values of the  $E_{2,n}$  distributions for  $41 \leq n \leq 80$ .

$n \backslash \alpha$	0.50	0.40	0.30	0.20	0.15	0.10	0.05	0.025	0.01	0.005
41	1.4654	1.9429	2.5632	3.4483	4.0818	4.9748	6.5567	8.2051	10.465	12.202
42	1.4632	1.9396	2.5581	3.4401	4.0711	4.9672	6.5337	8.1804	10.443	12.161
43	1.4610	1.9365	2.5534	3.4324	4.0611	4.9623	6.5066	8.1733	10.381	12.124
44	1.4590	1.9336	2.5490	3.4253	4.0519	4.9505	6.4900	8.1538	10.329	12.077
45	1.4572	1.9309	2.5448	3.4186	4.0432	4.9375	6.4746	8.1201	10.301	12.014
46	1.4554	1.9282	2.5408	3.4123	4.0352	4.9257	6.4662	8.0911	10.271	11.985
47	1.4536	1.9258	2.5371	3.4064	4.0276	4.9199	6.4603	8.0682	10.246	11.911
48	1.4520	1.9234	2.5336	3.4009	4.0205	4.9125	6.4435	8.0314	10.196	11.876
49	1.4505	1.9212	2.5303	3.3957	4.0138	4.8934	6.4221	8.0188	10.177	11.864
50	1.4490	1.9190	2.5271	3.3908	4.0075	4.8930 <sup>†</sup>	6.4130	7.9810	10.128	11.791
51	1.4476	1.9170	2.5241	3.3861	4.0016	4.8839	6.4018	7.9603	10.096	11.755
52	1.4462	1.9151	2.5213	3.3817	3.9959	4.8753	6.3853	7.9501	10.080	11.720
53	1.4449	1.9132	2.5186	3.3775	3.9906	4.8673	6.3745	7.9310	10.044	11.706
54	1.4437	1.9114	2.5160	3.3735	3.9855	4.8597	6.3605	7.9195	10.002	11.673
55	1.4425	1.9097	2.5135	3.3697	3.9807	4.8525	6.3513	7.8927	9.9426	11.610
56	1.4414	1.9081	2.5112	3.3661	3.9762	4.8457	6.3457	7.8892	9.9220	11.602
57	1.4403	1.9066	2.5089	3.3627	3.9718	4.8393	6.3393	7.8621	9.9175	11.586
58	1.4392	1.9051	2.5068	3.3594	3.9677	4.8333	6.3312	7.8561	9.9082	11.546
59	1.4382	1.9036	2.5047	3.3563	3.9637	4.8275	6.3252	7.8433	9.8975	11.501
60	1.4372	1.9022	2.5027	3.3533	3.9599	4.8220	6.3192 <sup>†</sup>	7.8397 <sup>†</sup>	9.8882 <sup>†</sup>	11.486 <sup>†</sup>
61	1.4363	1.9009	2.5008	3.3504	3.9563	4.8168	6.3100	7.8255	9.8661	11.455
62	1.4354	1.8996	2.4990	3.3477	3.9529	4.8118	6.3013	7.8121	9.8453	11.426
63	1.4345	1.8984	2.4972	3.3451	3.9496	4.8071	6.2930	7.7995	9.8259	11.400
64	1.4337	1.8972	2.4955	3.3425	3.9464	4.8025	6.2852	7.7876	9.8076	11.374
65	1.4329	1.8961	2.4939	3.3401	3.9433	4.7982	6.2778	7.7763	9.7903	11.351
66	1.4321	1.8950	2.4923	3.3378	3.9404	4.7941	6.2707	7.7657	9.7740	11.329
67	1.4313	1.8939	2.4908	3.3355	3.9376	4.7901	6.2640	7.7556	9.7586	11.308
68	1.4306	1.8929	2.4894	3.3334	3.9349	4.7863	6.2576	7.7460	9.7441	11.288
69	1.4299	1.8919	2.4879	3.3313	3.9322	4.7826	6.2515	7.7369	9.7302	11.269
70	1.4292	1.8909	2.4866	3.3293	3.9297	4.7791	6.2456	7.7283	9.7171	11.251
71	1.4285	1.8900	2.4853	3.3273	3.9273	4.7757	6.2400	7.7200	9.7046	11.235
72	1.4279	1.8891	2.4840	3.3254	3.9250	4.7725	6.2347	7.7121	9.6928	11.219
73	1.4273	1.8882	2.4828	3.3236	3.9227	4.7694	6.2296	7.7046	9.6814	11.203
74	1.4266	1.8874	2.4816	3.3219	3.9205	4.7663	6.2247	7.6974	9.6706	11.189
75	1.4261	1.8865	2.4804	3.3202	3.9184	4.7634	6.2200	7.6905	9.6603	11.175
76	1.4255	1.8857	2.4793	3.3186	3.9164	4.7606	6.2154	7.6840	9.6505	11.162
77	1.4249	1.8850	2.4782	3.3170	3.9144	4.7579	6.2111	7.6776	9.6410	11.149
78	1.4244	1.8842	2.4772	3.3154	3.9125	4.7553	6.2069	7.6716	9.6320	11.137
79	1.4239	1.8835	2.4761	3.3140	3.9106	4.7528	6.2029	7.6657	9.6233	11.126
80	1.4233	1.8828	2.4751	3.3125	3.9088	4.7504	6.1990	7.6602	9.6150	11.115
$\chi_2^2$	1.3863	1.8326	2.4079	3.2189	3.7942	4.6052	5.9915	7.3778	9.2103	10.597

**Table 3:** Critical values of the  $E_{3,n}$  distributions for  $4 \leq n \leq 40$ .

$n \backslash \alpha$	0.50	0.40	0.30	0.20	0.15	0.10	0.05	0.025	0.01	0.005
4	$+\infty$	$+\infty$	$+\infty$	$+\infty$	$+\infty$	$+\infty$	$+\infty$	$+\infty$	$+\infty$	$+\infty$
5	$+\infty$	$+\infty$	$+\infty$	$+\infty$	$+\infty$	$+\infty$	$+\infty$	$+\infty$	$+\infty$	$+\infty$
6	$+\infty$	$+\infty$	$+\infty$	$+\infty$	$+\infty$	$+\infty$	$+\infty$	$+\infty$	$+\infty$	$+\infty$
7	7.5731	14.2804	$+\infty$	$+\infty$	$+\infty$	$+\infty$	$+\infty$	$+\infty$	$+\infty$	$+\infty$
8	5.5257	8.3282	14.6460	$+\infty$	$+\infty$	$+\infty$	$+\infty$	$+\infty$	$+\infty$	$+\infty$
9	4.6472	6.5535	9.8557	18.4671	43.4728	$+\infty$	$+\infty$	$+\infty$	$+\infty$	$+\infty$
10	4.1406	5.6475	7.9980	12.7116	18.1329	38.0302	$+\infty$	$+\infty$	$+\infty$	$+\infty$
11	3.8029	5.0912	7.0069	10.4385	13.7590	20.8409	$+\infty$	$+\infty$	$+\infty$	$+\infty$
12	3.5834	4.7341	6.3639	9.1553	11.6031	16.1416	31.7073	$+\infty$	$+\infty$	$+\infty$
13	3.4151	4.4533	5.9128	8.2879	10.2949	13.7663	22.9432	47.405	$+\infty$	$+\infty$
14	3.2915	4.2704	5.6093	7.7517	9.4785	12.3629	19.2193	31.035	$+\infty$	$+\infty$
15	3.1794	4.1036	5.3532	7.2956	8.8433	11.3421	16.8712	25.199	50.154	$+\infty$
16	3.1026	3.9822	5.1636	6.9592	8.3541	10.5654	15.2483	21.808	36.644	67.101
17	3.0239	3.8631	4.9991	6.6969	7.9826	9.9959	14.1083	19.452	30.477	45.983
18	2.9838	3.8054	4.8799	6.4804	7.7084	9.5818	13.3314	18.052	26.666	36.410
19	2.9182	3.7178	4.7621	6.2864	7.4344	9.1854	12.5848	16.819	24.129	31.865
20	2.8790	3.6635	4.6693	6.1451	7.2484	8.9067	12.1136	15.931	22.378	28.993
21	2.8506	3.6065	4.5938	6.0264	7.0834	8.6579	11.6394	15.123	20.838	26.610
22	2.8066	3.5543	4.5176	5.8994	6.9275	8.4385	11.2608	14.527	19.708	24.733
23	2.7860	3.5200	4.4584	5.8124	6.8135	8.2813	10.9850	14.029	18.845	23.200
24	2.7585	3.4836	4.4080	5.7395	6.7107	8.1438	10.7722	13.721	18.277	22.455
25	2.7299	3.4398	4.3518	5.6575	6.6117	7.9844	10.5218	13.317	17.638	21.453
26	2.7170	3.4196	4.3156	5.5953	6.5327	7.8720	10.3225	13.020	17.073	20.628
27	2.6956	3.3944	4.2844	5.5533	6.4618	7.7823	10.1790	12.795	16.584	19.943
28	2.6876	3.3776	4.2556	5.4977	6.3852	7.6689	9.9715	12.502	16.177	19.397
29	2.6673	3.3536	4.2221	5.4397	6.3135	7.5731	9.8421	12.274	15.879	18.831
30	2.6545 <sup>†</sup>	3.3248	4.1860	5.3910	6.2662	7.5136	9.7303	12.106	15.571	18.477
31	2.6412	3.3160	4.1640	5.3623	6.2140	7.4355	9.6224	11.963	15.339	18.055
32	2.6291	3.3055	4.1511	5.3404	6.1804	7.3769	9.4992	11.774	15.054	17.778
33	2.6180	3.2805	4.1206	5.2952	6.1371	7.3276	9.4368	11.669	14.856	17.524
34	2.6078	3.2686	4.1002	5.2663	6.0920	7.2737	9.3674	11.563	14.646	17.205
35	2.5984	3.2578	4.0846	5.2391	6.0671	7.2311	9.2866	11.422	14.466	16.938
36	2.5897	3.2481	4.0749	5.2301	6.0457	7.2056	9.2216	11.318	14.253	16.671
37	2.5817	3.2287	4.0478	5.1879	5.9932	7.1447	9.1475	11.234	14.148	16.505
38	2.5742	3.2275	4.0431	5.1716	5.9672	7.1027	9.0657	11.112	13.945	16.230
39	2.5672	3.2114	4.0213	5.1371	5.9368	7.0484	9.0079	11.016	13.837	16.044
40	2.5606	3.2037	4.0059	5.1255	5.9110	7.0239	8.9746	10.996	13.829	16.028
$\chi_3^2$	2.3660	2.9462	3.6649	4.6416	5.3170	6.2514	7.8147	9.3484	11.345	12.838

**Table 3 Cont'ed:** Critical values of the  $E_{3,n}$  distributions for  $41 \leq n \leq 80$ .

$n \backslash \alpha$	0.50	0.40	0.30	0.20	0.15	0.10	0.05	0.025	0.01	0.005
41	2.5545	3.1949	4.0030	5.1163	5.9048	7.0174	8.9562	10.928	13.658	15.768
42	2.5487	3.1853	3.9990	5.1064	5.8843	6.9842	8.8944	10.835	13.539	15.682
43	2.5433	3.1789	3.9770	5.0868	5.8662	6.9573	8.8573	10.803	13.474	15.623
44	2.5382	3.1691	3.9604	5.0542	5.8245	6.9081	8.7806	10.675	13.330	15.480
45	2.5334	3.1649	3.9562	5.0472	5.8115	6.8937	8.7498	10.661	13.260	15.303
46	2.5288	3.1587	3.9461	5.0377	5.8031	6.8729	8.7255	10.622	13.212	15.266
47	2.5245	3.1487	3.9378	5.0284	5.7978	6.8697	8.7195	10.607	13.152	15.226
48	2.5204	3.1466	3.9366	5.0257	5.7820	6.8499	8.6823	10.5455	13.096	15.109
49	2.5165	3.1446	3.9295	5.0026	5.7634	6.8255	8.6281	10.4873	12.969	14.920
50	2.5128	3.1418 <sup>†</sup>	3.9242 <sup>†</sup>	4.9967	5.7481	6.8044	8.6094	10.4450	12.929	14.855
51	2.5093	3.1366	3.9169	4.9856	5.7424	6.7994	8.5984	10.4328	12.893	14.818
52	2.5060	3.1317	3.9100	4.9804	5.7372	6.7805	8.5717	10.4109	12.863	14.797
53	2.5028	3.1270	3.9034	4.9781	5.7287	6.7710	8.5553	10.3977	12.829	14.767
54	2.4997	3.1226	3.8972	4.9527	5.6990	6.7478	8.5389	10.3140	12.783	14.629
55	2.4968	3.1183	3.8913	4.9486	5.6930	6.7285	8.4982	10.2922	12.731	14.622
56	2.4940	3.1143	3.8857	4.9479	5.6843	6.7184	8.4880	10.2614	12.646	14.483
57	2.4913	3.1104	3.8804	4.9387	5.6681	6.7126	8.4763	10.2405	12.614	14.462
58	2.4887	3.1067	3.8753	4.9330	5.6679	6.6987	8.4544	10.2147	12.608	14.449
59	2.4863	3.1032	3.8705	4.9268	5.6564	6.6766	8.4261	10.1792	12.554	14.394
60	2.4839	3.0998	3.8658	4.9195 <sup>†</sup>	5.6505	6.6724	8.4125	10.1552	12.550	14.350
61	2.4816	3.0966	3.8614	4.9128	5.6443	6.6696	8.4101	10.1413	12.499	14.301
62	2.4794	3.0935	3.8572	4.9063	5.6288	6.6513	8.3888	10.1325	12.467	14.267
63	2.4773	3.0905	3.8531	4.9001	5.6256	6.6495	8.3817	10.1262	12.431	14.243
64	2.4753	3.0877	3.8492	4.8943	5.6215	6.6400	8.3775	10.1011	12.425	14.198
65	2.4733	3.0849	3.8455	4.8886	5.6186	6.6351	8.3692	10.0830	12.376	14.165
66	2.4714	3.0823	3.8419	4.8833	5.6105	6.6324	8.3479	10.0553	12.360	14.145
67	2.4696	3.0798	3.8385	4.8781	5.6010	6.6254	8.3236	10.0425	12.345	14.107
68	2.4678	3.0773	3.8352	4.8732	5.5940	6.6189	8.3076	10.0244	12.292	14.077
69	2.4661	3.0750	3.8320	4.8685	5.5909	6.6121	8.2967	10.0165	12.284	14.034
70	2.4645	3.0727	3.8289	4.8639	5.5892 <sup>†</sup>	6.5947 <sup>†</sup>	8.2955 <sup>†</sup>	9.9967 <sup>†</sup>	12.271 <sup>†</sup>	13.988 <sup>†</sup>
71	2.4629	3.0705	3.8260	4.8596	5.5833	6.5869	8.2838	9.9800	12.246	13.956
72	2.4613	3.0684	3.8231	4.8554	5.5777	6.5795	8.2727	9.9641	12.222	13.925
73	2.4598	3.0663	3.8204	4.8514	5.5723	6.5724	8.2621	9.9490	12.199	13.897
74	2.4584	3.0643	3.8177	4.8475	5.5671	6.5655	8.2520	9.9346	12.177	13.870
75	2.4570	3.0624	3.8151	4.8437	5.5621	6.5590	8.2423	9.9209	12.156	13.844
76	2.4556	3.0606	3.8126	4.8401	5.5573	6.5527	8.2331	9.9078	12.137	13.819
77	2.4543	3.0588	3.8102	4.8366	5.5527	6.5467	8.2242	9.8953	12.118	13.796
78	2.4530	3.0570	3.8079	4.8333	5.5483	6.5409	8.2157	9.8833	12.100	13.773
79	2.4518	3.0553	3.8056	4.8300	5.5440	6.5354	8.2076	9.8719	12.083	13.752
80	2.4506	3.0537	3.8035	4.8269	5.5399	6.5300	8.1998	9.8609	12.067	13.732
$\chi^2_3$	2.3660	2.9462	3.6649	4.6416	5.3170	6.2514	7.8147	9.3484	11.345	12.838