

Table 1: Results of test examples 1-2

N	Pdim	SSBFGS						SCGP				SMDFP				SMBFGS			
		Nit	Fval	PTime	Norm	Nit	Fval	PTime	Norm	Nit	Fval	PTime	Norm	Nit	Fval	PTime	Norm		
1	5000	x1	1	3	0.0891	0	30	103	0.3415	6.72E-13	***	***	***	***	44	166	0.3922	5.91E-11	
	5000	x2	1	3	0.0156	0	22	75	0.1514	4.96E-11	11	24	0.2021	0	47	156	0.2116	1.95E-11	
	5000	x3	9	18	0.0367	3.44E-12	2	5	0.0333	0	***	***	***	***	51	204	0.2618	7.58E-11	
	5000	x4	1	3	0.0082	0	31	84	0.2364	5.71E-11	***	***	***	***	59	173	0.2533	8.80E-11	
	5000	x5	1	3	0.0078	0	29	78	0.1672	7.09E-11	***	***	***	***	43	157	0.2237	1.38E-11	
	5000	x6	1	3	0.0080	0	31	84	0.1559	5.65E-11	***	***	***	***	54	175	0.2342	8.23E-11	
	10000	x1	1	3	0.0134	0	33	96	0.2625	7.83E-11	***	***	***	***	49	155	0.3302	6.71E-11	
	10000	x2	1	3	0.0111	0	29	91	0.2592	9.57E-11	***	***	***	***	52	184	0.3649	1.45E-11	
	10000	x3	6	15	0.0465	2.56E-21	2	5	0.0234	0	***	***	***	***	53	179	0.412	5.63E-11	
	10000	x4	1	3	0.0106	0	18	48	0.1551	2.44E-11	***	***	***	***	60	221	0.4152	3.95E-11	
	10000	x5	1	3	0.0107	0	24	87	0.2434	0	***	***	***	***	45	168	0.331	1.29E-11	
	10000	x6	1	3	0.0094	0	28	89	0.2339	7.13E-11	***	***	***	***	55	173	0.3569	7.33E-11	
	50000	x1	1	3	0.0357	0	31	97	0.8386	8.82E-11	***	***	***	***	47	140	1.2831	3.39E-11	
	50000	x2	1	3	0.0335	0	30	92	0.8845	1.42E-12	11	24	0.2508	5.56E-20	49	159	1.4141	9.07E-11	
	50000	x3	7	17	0.1989	2.04E-22	2	5	0.0682	0	***	***	***	***	54	173	1.5243	9.09E-11	
	50000	x4	1	3	0.0349	0	32	84	0.9956	7.22E-11	***	***	***	***	55	155	1.3769	7.20E-11	
	50000	x5	1	3	0.0341	0	20	80	0.6943	0	***	***	***	***	45	173	1.4298	8.96E-11	
	50000	x6	1	3	0.0308	0	29	91	1.1227	6.11E-11	***	***	***	***	54	139	1.4065	7.80E-11	
2	5000	x1	7	15	0.0440	6.83E-12	24	74	0.3293	1.77E-11	***	***	***	***	69	419	0.6812	2.36E-11	
	5000	x2	6	14	0.0457	0	31	95	0.2572	4.19E-11	***	***	***	***	67	422	0.6667	9.34E-11	
	5000	x3	6	14	0.0422	0	30	122	0.2593	3.59E-11	13	26	0.0786	8.59E-11	65	433	0.6858	5.92E-11	
	5000	x4	7	15	0.0398	5.64E-12	28	81	0.1993	2.15E-11	***	***	***	***	67	433	0.6592	3.08E-11	
	5000	x5	7	15	0.0405	5.62E-12	19	39	0.1417	8.66E-11	***	***	***	***	65	432	0.6496	8.75E-11	
	5000	x6	7	15	0.0410	5.64E-12	34	124	0.2488	7.44E-11	***	***	***	***	65	394	0.6259	9.15E-11	
	10000	x1	6	14	0.0594	0	27	98	0.3307	1.11E-12	***	***	***	***	67	404	1.102	3.94E-11	
	10000	x2	6	14	0.0650	0	31	87	0.3727	6.85E-11	***	***	***	***	68	420	1.0509	4.33E-11	
	10000	x3	5	12	0.0522	0	35	127	0.4117	1.77E-11	***	***	***	***	66	435	1.0771	1.84E-11	
	10000	x4	6	14	0.0736	0	31	95	0.3476	7.09E-11	***	***	***	***	75	446	1.167	7.99E-11	
	10000	x5	6	14	0.0564	0	32	86	0.3900	2.42E-11	***	***	***	***	62	427	1.0841	5.47E-11	
	10000	x6	6	14	0.0712	0	30	83	0.3431	9.52E-11	***	***	***	***	74	423	1.1039	3.11E-11	
	50000	x1	5	12	0.2369	0	31	110	1.6047	5.54E-11	***	***	***	***	64	386	4.7565	4.59E-11	
	50000	x2	5	12	0.2479	0	42	222	2.6886	1.67E-11	***	***	***	***	63	414	5.021	3.00E-11	
	50000	x3	4	10	0.2158	0	37	143	1.9384	1.18E-11	***	***	***	***	63	398	4.8459	6.90E-11	
	50000	x4	5	12	0.2414	0	31	84	1.3760	5.37E-11	***	***	***	***	78	416	5.3164	7.82E-11	
	50000	x5	5	12	0.2381	0	36	134	1.8614	6.66E-11	***	***	***	***	62	412	5.1416	6.80E-11	
	50000	x6	5	12	0.2442	0	30	82	1.2970	4.78E-11	***	***	***	***	72	440	5.5131	2.48E-11	

Table 2: Results of test examples 3-4

N	Pdim		SSBFGS				SCGP				SMDFP				SMBFGS			
			Nit	Fval	Ptime	Norm	Nit	Fval	Ptime	Norm	Nit	Fval	Ptime	Norm	Nit	Fval	Ptime	Norm
3	5000	x1	1	3	0.0077	0	30	103	0.1639	6.72E-13	***	***	***	***	51	187	0.2580	7.41E-11
	5000	x2	1	3	0.0071	0	33	126	0.1834	5.08E-11	11	24	0.0480	0	74	241	0.3282	9.81E-11
	5000	x3	6	13	0.0287	1.19E-20	2	5	0.0323	0	***	***	***	***	75	291	0.3594	8.79E-12
	5000	x4	1	3	0.0078	0	31	84	0.1395	5.71E-11	***	***	***	***	58	164	0.2252	9.38E-11
	5000	x5	1	3	0.0082	0	29	78	0.1589	7.09E-11	***	***	***	***	74	251	0.3286	1.40E-11
	5000	x6	1	3	0.0084	0	31	84	0.1643	5.65E-11	***	***	***	***	66	206	0.3060	7.27E-12
	10000	x1	1	3	0.0089	0	24	69	0.1785	7.66E-11	***	***	***	***	57	228	0.4469	8.90E-12
	10000	x2	1	3	0.0105	0	29	91	0.2185	9.55E-11	***	***	***	***	77	243	0.4990	9.40E-11
	10000	x3	6	13	0.0573	8.05E-20	2	5	0.0166	0	***	***	***	***	73	253	0.5306	7.72E-11
	10000	x4	1	3	0.0099	0	33	98	0.2466	5.85E-11	***	***	***	***	62	182	0.3894	5.20E-11
	10000	x5	1	3	0.0111	0	24	87	0.2027	0	***	***	***	***	67	212	0.4486	5.42E-11
	10000	x6	1	3	0.0083	0	28	89	0.2350	7.13E-11	***	***	***	***	49	180	0.3545	3.97E-11
	50000	x1	1	3	0.0336	0	36	144	1.0298	8.00E-11	***	***	***	***	56	202	1.6523	9.99E-11
	50000	x2	1	3	0.0343	0	31	123	0.9540	1.02E-11	11	24	0.2518	5.6E-20	81	294	2.4453	2.89E-11
	50000	x3	8	15	0.2202	2.36E-33	2	5	0.0895	0	***	***	***	***	67	298	2.2932	5.56E-11
	50000	x4	1	3	0.0322	0	32	84	0.8025	7.22E-11	***	***	***	***	62	166	1.6133	4.41E-11
	50000	x5	1	3	0.0355	0	20	80	0.6549	0	***	***	***	***	69	236	2.0352	1.00E-10
	50000	x6	1	3	0.0332	0	20	60	0.5607	0	***	***	***	***	60	189	1.6522	3.18E-11
4	5000	x1	29	112	0.1967	8.65E-11	***	***	***	***	***	***	***	***	443	1158	1.9143	8.41E-11
	5000	x2	26	108	0.1684	3.96E-11	***	***	***	***	***	***	***	***	316	775	1.3124	9.73E-11
	5000	x3	25	101	0.1797	5.31E-11	***	***	***	***	***	***	***	***	221	562	0.9669	9.62E-11
	5000	x4	29	114	0.1852	8.11E-11	***	***	***	***	***	***	***	***	202	514	0.8655	9.56E-11
	5000	x5	31	119	0.1903	5.54E-11	***	***	***	***	***	***	***	***	191	456	0.7955	9.28E-11
	5000	x6	32	126	0.1994	9.93E-11	***	***	***	***	***	***	***	***	208	509	0.9002	9.87E-11
	10000	x1	27	111	0.2625	7.98E-11	***	***	***	***	***	***	***	***	217	495	1.3943	8.77E-11
	10000	x2	28	116	0.2719	6.06E-11	***	***	***	***	***	***	***	***	197	509	1.4192	9.23E-11
	10000	x3	31	117	0.3179	4.63E-11	***	***	***	***	***	***	***	***	222	532	1.5115	8.40E-11
	10000	x4	31	120	0.2819	3.65E-11	***	***	***	***	***	***	***	***	196	487	1.3763	9.14E-11
	10000	x5	25	97	0.2611	5.82E-11	***	***	***	***	***	***	***	***	225	599	1.6810	6.31E-11
	10000	x6	28	117	0.2722	3.26E-11	***	***	***	***	***	***	***	***	185	498	1.3381	7.77E-11
	50000	x1	31	121	1.2074	7.17E-11	***	***	***	***	***	***	***	***	270	616	7.6415	9.93E-11
	50000	x2	30	114	1.1562	9.93E-11	***	***	***	***	***	***	***	***	340	809	9.7806	6.89E-11
	50000	x3	34	130	1.3369	8.24E-11	***	***	***	***	***	***	***	***	389	1012	11.9600	9.31E-11
	50000	x4	31	125	1.2808	7.18E-11	***	***	***	***	***	***	***	***	195	539	6.1357	9.68E-11
	50000	x5	36	136	1.3906	8.62E-11	***	***	***	***	***	***	***	***	245	562	6.9740	9.35E-11
	50000	x6	34	132	1.3013	9.41E-11	***	***	***	***	***	***	***	***	192	507	6.0396	9.92E-11

Table 3: Results of test examples 5-6

N	Pdim	SSBFGS				SCGP				SMDFP				SMBFGS				
		Nit	Fval	Ptime	Norm	Nit	Fval	Ptime	Norm	Nit	Fval	Ptime	Norm	Nit	Fval	Ptime	Norm	
5	5000	x1	1	4	0.0099	0	39	217	0.2288	6.94E-11	13	110	0.0894	2.66E-11	41	144	0.2021	7.38E-11
	5000	x2	2	7	0.0147	0	29	135	0.2022	7.83E-11	11	91	0.1086	3.19E-11	53	192	0.2640	3.26E-11
	5000	x3	3	8	0.0146	0	39	196	0.2758	5.55E-11	17	141	0.1567	3.49E-11	70	187	0.3077	3.97E-11
	5000	x4	1	4	0.0098	0	32	142	0.2436	6.41E-11	21	178	0.1757	4.65E-12	58	201	0.2921	3.59E-11
	5000	x5	1	4	0.0101	0	27	107	0.1575	0	10	83	0.0928	3.28E-11	52	165	0.2354	4.66E-11
	5000	x6	1	4	0.0089	0	20	87	0.1401	0	20	170	0.1768	9.46E-11	54	191	0.2463	4.51E-12
	10000	x1	1	4	0.0131	0	24	112	0.2242	5.80E-11	13	110	0.1847	2.71E-11	48	174	0.3726	1.91E-11
	10000	x2	2	7	0.0230	0	29	104	0.2575	0	11	91	0.1687	4.52E-11	48	178	0.3873	6.36E-11
	10000	x3	3	8	0.0294	0	19	56	0.1736	0	17	141	0.2429	4.94E-11	72	216	0.4942	6.68E-11
	10000	x4	1	4	0.0134	0	36	160	0.3205	0	21	178	0.2895	6.38E-12	56	195	0.4447	1.81E-11
	10000	x5	1	4	0.0124	0	30	120	0.2577	5.60E-11	10	83	0.1455	4.64E-11	58	164	0.3996	6.98E-11
	10000	x6	1	4	0.0124	0	20	87	0.2144	0	21	178	0.2863	6.00E-12	51	187	0.4781	6.90E-11
	50000	x1	1	4	0.0456	0	32	130	1.0303	8.54E-12	13	110	0.6986	2.75E-11	51	168	1.8474	4.49E-11
	50000	x2	2	7	0.0851	0	39	188	1.3519	3.31E-11	12	99	0.7632	4.35E-12	50	196	1.7470	6.23E-11
	50000	x3	3	8	0.1122	0	30	146	1.0988	3.27E-11	18	149	1.1268	4.77E-12	64	211	2.1240	2.41E-11
	50000	x4	1	4	0.0452	0	29	131	1.0124	0	21	178	1.2087	1.39E-11	57	166	1.6889	2.33E-11
	50000	x5	1	4	0.0491	0	28	113	0.9427	2.68E-11	11	91	0.6500	4.49E-12	61	201	1.9479	3.90E-11
	50000	x6	1	4	0.0473	0	38	203	1.4311	0	21	178	1.1893	1.37E-11	52	158	1.6084	3.41E-11
6	5000	x1	1	5	0.0098	0	28	143	0.2051	4.86E-11	1	13	0.0327	0	1	13	0.0189	0
	5000	x2	1	5	0.0134	0	31	151	0.2105	5.85E-11	1	13	0.0213	0	1	13	0.0211	0
	5000	x3	2	7	0.0167	0	21	88	0.1527	5.25E-11	8	97	0.1264	0	61	248	0.3617	1.70E-11
	5000	x4	1	5	0.0159	0	20	96	0.1361	0	1	13	0.0186	0	1	13	0.0216	0
	5000	x5	1	5	0.0091	0	29	144	0.2057	5.75E-11	1	13	0.0198	0	1	13	0.0182	0
	5000	x6	1	5	0.0109	0	20	96	0.1483	0	1	13	0.0181	0	1	13	0.0199	0
	10000	x1	1	5	0.0159	0	24	154	0.3179	0	1	13	0.0277	0	1	13	0.0317	0
	10000	x2	1	5	0.0166	0	21	106	0.2436	0	1	13	0.0306	0	1	13	0.0306	0
	10000	x3	2	7	0.0236	0	21	88	0.2223	7.42E-11	8	97	0.2081	0	60	240	0.5169	9.63E-11
	10000	x4	1	5	0.0164	0	29	140	0.2920	0	1	13	0.0311	0	1	13	0.0326	0
	10000	x5	1	5	0.0131	0	21	97	0.2297	0	1	13	0.0309	0	1	13	0.0249	0
	10000	x6	1	5	0.0162	0	23	114	0.2431	0	1	13	0.0288	0	1	13	0.0272	0
	50000	x1	1	5	0.0493	0	21	112	0.7725	0	1	13	0.1090	0	1	13	0.1097	0
	50000	x2	1	5	0.0504	0	31	139	1.1490	0	1	13	0.1323	0	1	13	0.1306	0
	50000	x3	2	7	0.0870	0	37	204	1.4059	1.58E-11	8	97	0.8349	0	60	249	2.3283	4.41E-11
	50000	x4	1	5	0.0571	0	31	139	1.0998	0	1	13	0.1573	0	1	13	0.1221	0
	50000	x5	1	5	0.0515	0	28	131	1.0983	5.29E-11	1	13	0.1266	0	1	13	0.1253	0
	50000	x6	1	5	0.0471	0	28	128	1.0098	0	1	13	0.1287	0	1	13	0.1248	0