

Table 1: Results of test examples 1-2

N	Pdim	SSDFP						SCGP				SMDFP				SMBFGS			
		Nit	Fval	Ptime	Norm	Nit	Fval	Ptime	Norm	Nit	Fval	Ptime	Norm	Nit	Fval	Ptime	Norm		
1	5000	x1	19	28	0.0944	8.02E-11	20	41	0.1372	2.41E-11	***	***	***	***	44	166	3.6548	5.91E-11	
	5000	x2	13	19	0.0761	4.66E-12	19	39	0.0839	9.95E-11	12	25	0.0642	5.07E-11	47	156	0.2192	1.95E-11	
	5000	x3	15	23	0.0744	8.35E-11	17	36	0.0715	2.83E-12	***	***	***	***	51	204	0.2514	7.58E-11	
	5000	x4	24	34	0.1071	6.66E-12	31	95	0.1501	4.19E-11	***	***	***	***	59	173	0.2337	8.80E-11	
	5000	x5	16	24	0.0720	5.36E-11	19	39	0.0749	8.66E-11	***	***	***	***	43	157	0.1996	1.38E-11	
	5000	x6	19	27	0.0875	9.67E-11	30	94	0.1488	8.94E-12	***	***	***	***	54	175	0.2347	8.23E-11	
	10000	x1	18	26	0.1478	9.87E-11	20	41	0.1452	7.97E-11	***	***	***	***	49	155	0.3150	6.71E-11	
	10000	x2	10	15	0.0691	3.45E-11	19	41	0.1323	7.47E-11	***	***	***	***	52	184	0.3752	1.45E-11	
	10000	x3	14	21	0.1302	8.86E-11	19	38	0.1385	5.27E-11	***	***	***	***	53	179	0.3705	5.63E-11	
	10000	x4	23	33	0.1737	7.56E-11	31	87	0.2179	6.85E-11	***	***	***	***	60	221	0.4295	3.95E-11	
	10000	x5	16	23	0.1240	1.29E-11	32	86	0.2264	2.42E-11	***	***	***	***	45	168	0.3250	1.29E-11	
	10000	x6	14	22	0.1319	4.25E-11	30	82	0.2106	1.67E-11	***	***	***	***	55	173	0.3513	7.33E-11	
	50000	x1	11	20	0.3981	5.40E-11	20	44	0.5667	8.86E-11	***	***	***	***	47	140	1.2463	3.39E-11	
	50000	x2	7	12	0.2538	2.67E-11	20	41	0.5395	2.88E-11	***	***	***	***	49	159	1.4173	9.07E-11	
	50000	x3	7	10	0.2191	7.23E-11	18	38	0.5277	4.82E-11	***	***	***	***	54	173	1.4916	9.09E-11	
	50000	x4	18	29	0.6042	3.80E-11	42	222	1.7604	1.67E-11	***	***	***	***	55	155	1.4099	7.20E-11	
	50000	x5	17	30	0.5806	9.84E-11	36	134	1.2527	6.66E-11	***	***	***	***	45	173	1.4173	8.96E-11	
	50000	x6	22	36	0.7350	4.29E-11	32	91	0.9843	7.87E-11	***	***	***	***	54	139	1.3202	7.80E-11	
2	5000	x1	1	3	0.0067	0	19	39	0.0495	7.72E-11	9	19	0.0327	0	69	419	0.6420	2.36E-11	
	5000	x2	6	9	0.0205	2.03E-20	1	3	0.0072	0	8	20	0.0269	0	67	422	0.5843	9.34E-11	
	5000	x3	7	11	0.0246	4.77E-21	1	3	0.0073	0	9	24	0.0379	1.40E-20	65	433	0.6590	5.92E-11	
	5000	x4	1	3	0.0069	0	22	75	0.0735	4.96E-11	11	24	0.039	0	67	433	0.6456	3.08E-11	
	5000	x5	1	3	0.0089	0	29	78	0.0851	7.09E-11	***	***	***	***	65	432	0.6269	8.75E-11	
	5000	x6	1	3	0.0071	0	30	113	0.1018	4.96E-11	***	***	***	***	65	394	0.5860	9.15E-11	
	10000	x1	1	3	0.0101	0	19	41	0.0867	5.41E-11	8	17	0.0416	1.40E-19	67	404	1.0883	3.94E-11	
	10000	x2	6	9	0.0290	2.86E-20	1	3	0.0076	0	8	20	0.0522	0	68	420	1.1113	4.33E-11	
	10000	x3	7	11	0.0328	6.74E-21	1	3	0.0094	0	8	22	0.0556	4.24E-19	66	435	1.1084	1.84E-11	
	10000	x4	1	3	0.0091	0	29	91	0.1529	9.57E-11	***	***	***	***	75	446	1.1793	7.99E-11	
	10000	x5	1	3	0.0103	0	24	87	0.1360	0	***	***	***	***	62	427	1.1009	5.47E-11	
	10000	x6	1	3	0.0077	0	31	101	0.1543	5.18E-11	***	***	***	***	74	423	1.2301	3.11E-11	
	50000	x1	5	8	0.1185	2.93E-11	20	41	0.3273	6.04E-11	9	19	0.2058	0	64	386	4.7375	4.59E-11	
	50000	x2	7	12	0.1637	6.32E-19	1	3	0.0268	0	8	20	0.2052	1.16E-18	63	414	5.0466	3.00E-11	
	50000	x3	8	16	0.1964	6.26E-14	1	3	0.0252	0	***	***	***	***	63	398	4.8759	6.90E-11	
	50000	x4	42	59	0.6904	7.58E-11	30	92	0.5489	1.42E-12	11	24	0.239	5.56E-20	78	416	5.4109	7.82E-11	
	50000	x5	1	3	0.0310	0	20	80	0.4516	0	***	***	***	***	62	412	4.9776	6.80E-11	
	50000	x6	1	3	0.0318	0	32	125	0.6909	8.50E-11	***	***	***	***	72	440	5.4020	2.48E-11	

Table 2: Results of test examples 3-4

N	Pdim	SSDFP				SCGP				SMDFP				SMBFGS				
		Nit	Fval	Ptime	Norm	Nit	Fval	Ptime	Norm	Nit	Fval	Ptime	Norm	Nit	Fval	Ptime	Norm	
3	5000	x1	1	3	0.0062	0	19	39	0.0532	7.72E-11	9	19	0.0338	0	51	187	0.2383	7.41E-11
	5000	x2	6	9	0.0198	2.03E-20	1	3	0.0067	0	8	20	0.0323	0	74	241	0.3085	9.81E-11
	5000	x3	7	11	0.0229	4.77E-21	1	3	0.0062	0	9	24	0.0328	1.40E-20	75	291	0.3470	8.79E-12
	5000	x4	1	3	0.0071	0	33	126	0.1201	5.08E-11	11	24	0.0360	0	58	164	0.2624	9.38E-11
	5000	x5	1	3	0.0079	0	29	78	0.0733	7.09E-11	***	***	***	***	74	251	0.3195	1.40E-11
	5000	x6	1	3	0.0071	0	18	48	0.0617	1.68E-11	***	***	***	***	66	206	0.2649	7.27E-12
	10000	x1	1	3	0.0089	0	19	41	0.1190	5.41E-11	8	17	0.0434	1.40E-19	57	228	0.4371	8.90E-12
	10000	x2	6	9	0.0297	2.86E-20	1	3	0.0091	0	8	20	0.0530	0	77	243	0.5212	9.40E-11
	10000	x3	7	11	0.0425	6.74E-21	1	3	0.0079	0	8	22	0.0576	4.24E-19	73	253	0.5312	7.72E-11
	10000	x4	1	3	0.0086	0	29	91	0.1585	9.55E-11	***	***	***	***	62	182	0.3892	5.20E-11
	10000	x5	1	3	0.0097	0	24	87	0.1359	0	***	***	***	***	67	212	0.4575	5.42E-11
	10000	x6	1	3	0.0088	0	36	134	0.1986	5.77E-11	***	***	***	***	49	180	0.3644	3.97E-11
	50000	x1	5	8	0.1023	2.93E-11	20	41	0.3321	6.04E-11	9	19	0.2132	0	56	202	1.6918	9.99E-11
	50000	x2	7	12	0.1709	6.32E-19	1	3	0.0288	0	8	20	0.2151	1.16E-18	81	294	2.6698	2.89E-11
	50000	x3	8	16	0.1946	6.26E-14	1	3	0.0274	0	***	***	***	***	67	298	2.2844	5.56E-11
	50000	x4	101	296	2.4434	7.51E-11	31	123	0.6620	1.02E-11	11	24	0.2714	5.56E-20	62	166	1.5656	4.41E-11
	50000	x5	1	3	0.0326	0	20	80	0.4362	0	***	***	***	***	69	236	2.0379	1.00E-10
	50000	x6	1	3	0.0314	0	32	84	0.5469	7.82E-11	***	***	***	***	60	189	1.5980	3.18E-11
4	5000	x1	1	4	0.0105	0	1	4	0.00977	0	19	205	0.2574	9.89E-12	41	144	0.2098	7.38E-11
	5000	x2	1	4	0.0111	0	2	7	0.0132	0	14	129	0.1770	1.42E-11	53	192	0.2545	3.26E-11
	5000	x3	5	22	0.0418	0	2	6	0.01692	0	16	145	0.2023	1.03E-11	70	187	0.3052	3.97E-11
	5000	x4	136	676	0.9393	9.83E-11	2	7	0.01501	0	30	313	0.3976	6.05E-11	58	201	0.2882	3.59E-11
	5000	x5	1	4	0.0096	0	1	4	0.00881	0	***	***	***	***	52	165	0.2346	4.66E-11
	5000	x6	1	4	0.0081	0	1	4	0.00794	0	***	***	***	***	54	191	0.2456	4.51E-12
	10000	x1	1	4	0.0201	0	1	4	0.01255	0	16	151	0.2988	4.56E-11	48	174	0.3880	1.91E-11
	10000	x2	3	10	0.0402	0	2	7	0.01809	0	15	166	0.3592	5.54E-11	48	178	0.4419	6.36E-11
	10000	x3	5	22	0.0734	0	2	6	0.01942	0	16	139	0.3151	9.29E-12	72	216	0.5301	6.68E-11
	10000	x4	138	686	1.5727	9.52E-11	2	7	0.02134	0	26	261	0.5332	2.67E-11	56	195	0.4310	1.81E-11
	10000	x5	1	4	0.0156	0	1	4	0.01097	0	19	229	0.4569	9.75E-12	58	164	0.3983	6.98E-11
	10000	x6	1	4	0.0158	0	1	4	0.0126	0	***	***	***	***	51	187	0.4023	6.90E-11
	50000	x1	86	399	3.9737	8.38E-11	1	4	0.04302	0	19	210	1.8393	1.33E-11	51	168	1.5579	4.49E-11
	50000	x2	4	17	0.2558	0	2	7	0.07987	0	22	216	1.9306	3.67E-11	50	196	1.7626	6.23E-11
	50000	x3	158	937	12.844	8.95E-11	2	6	0.07096	0	22	224	2.0243	6.4E-12	64	211	2.2398	2.41E-11
	50000	x4	152	759	7.4366	8.67E-11	2	7	0.0756	0	23	234	1.9994	6.17E-11	57	166	1.6714	2.33E-11
	50000	x5	105	504	5.4322	0	1	4	0.03981	0	19	227	2.0242	6.55E-12	61	201	1.9588	3.90E-11
	50000	x6	137	676	6.685	9.55E-11	1	4	0.04548	0	***	***	***	***	52	158	1.5707	3.41E-11

Table 3: Results of test examples 5-6

N	Pdim	SSDFP				SCGP				SMDFP				SMBFGS				
		Nit	Fval	Ptime	Norm	Nit	Fval	Ptime	Norm	Nit	Fval	Ptime	Norm	Nit	Fval	Ptime	Norm	
5	5000	x1	1	4	0.0106	0	19	61	0.0734	6.69E-11	8	66	0.0612	5.75E-11	443	1158	1.8917	8.41E-11
	5000	x2	2	6	0.0113	0	1	3	0.0060	0	9	72	0.0797	4.83E-11	316	775	1.4037	9.73E-11
	5000	x3	2	8	0.0147	0	20	60	0.0713	9.54E-11	9	67	0.0871	3.06E-11	221	562	0.9253	9.62E-11
	5000	x4	87	347	0.3835	8.57E-11	29	135	0.1154	7.83E-11	11	91	0.0997	3.19E-11	202	514	0.8951	9.56E-11
	5000	x5	1	4	0.0084	0	27	107	0.1050	0	10	83	0.0857	3.28E-11	191	456	0.8346	9.28E-11
	5000	x6	1	4	0.0101	0	20	87	0.0825	0	20	170	0.1725	5.88E-11	208	509	0.9123	9.87E-11
	10000	x1	1	4	0.0131	0	19	61	0.1059	9.45E-11	8	66	0.1178	8.13E-11	217	495	1.4597	8.77E-11
	10000	x2	2	6	0.0227	0	1	3	0.0076	0	9	72	0.1321	6.83E-11	197	509	1.4024	9.23E-11
	10000	x3	2	8	0.0237	0	20	63	0.1157	6.68E-11	9	67	0.1650	4.32E-11	222	532	1.5584	8.40E-11
	10000	x4	88	351	0.6888	9.49E-11	29	104	0.1595	0	11	91	0.1802	4.52E-11	196	487	1.3626	9.14E-11
	10000	x5	1	4	0.0128	0	30	120	0.1822	5.60E-11	10	83	0.1524	4.64E-11	225	599	1.6082	6.31E-11
	10000	x6	1	4	0.0119	0	20	87	0.1306	0	24	202	0.3298	1.98E-11	185	498	1.3504	7.77E-11
	50000	x1	2	6	0.0791	0	20	64	0.4359	5.12E-11	9	74	0.5552	7.94E-12	270	616	7.8065	9.93E-11
	50000	x2	4	13	0.1577	0	1	3	0.0310	0	10	80	0.6003	6.65E-12	340	809	9.9418	6.89E-11
	50000	x3	4	15	0.1835	0	21	63	0.4284	7.32E-11	9	67	0.5129	9.66E-11	389	1012	12.0278	9.31E-11
	50000	x4	106	421	3.5392	8.96E-11	39	188	0.9634	3.31E-11	12	99	0.7580	4.35E-12	195	539	6.1446	9.68E-11
	50000	x5	1	4	0.0463	0	28	113	0.6575	2.68E-11	11	91	0.6566	4.49E-12	245	562	7.0156	9.35E-11
	50000	x6	1	4	0.0504	0	27	108	0.6114	0	21	178	1.3371	2.47E-11	192	507	5.8715	9.92E-11
6	5000	x1	1	5	0.0106	0	20	81	0.0872	9.94E-11	1	13	0.0197	0	1	13	0.0186	0
	5000	x2	2	6	0.0132	0	1	4	0.0087	0	1	13	0.0197	0	1	13	0.0224	0
	5000	x3	2	7	0.0147	0	1	4	0.0071	0	2	25	0.0374	0	61	248	0.3509	1.70E-11
	5000	x4	1	5	0.0108	0	31	151	0.1440	5.85E-11	1	13	0.0186	0	1	13	0.0212	0
	5000	x5	1	5	0.0095	0	29	144	0.1395	5.75E-11	1	13	0.0196	0	1	13	0.0209	0
	5000	x6	1	5	0.0108	0	20	96	0.1010	0	1	13	0.0177	0	1	13	0.0179	0
	10000	x1	1	5	0.0182	0	20	85	0.1395	6.95E-11	1	13	0.0290	0	1	13	0.0297	0
	10000	x2	2	8	0.0260	0	1	4	0.0118	0	1	13	0.0439	0	1	13	0.0328	0
	10000	x3	3	10	0.0321	0	1	4	0.0092	0	2	25	0.0625	0	60	240	0.5331	9.63E-11
	10000	x4	1	5	0.0493	0	21	106	0.1487	0	1	13	0.0293	0	1	13	0.0337	0
	10000	x5	1	5	0.0157	0	21	97	0.1603	0	1	13	0.0318	0	1	13	0.0264	0
	10000	x6	1	5	0.0153	0	20	96	0.1487	0	1	13	0.0303	0	1	13	0.0294	0
	50000	x1	2	7	0.0934	0	21	85	0.5052	7.62E-11	1	13	0.1296	0	1	13	0.1136	0
	50000	x2	4	15	0.1927	0	1	4	0.0380	0	1	13	0.1236	0	1	13	0.1351	0
	50000	x3	5	19	0.2132	0	1	4	0.0343	0	2	25	0.2158	0	60	249	2.2166	4.41E-11
	50000	x4	127	761	5.9544	9.57E-11	31	139	0.7771	0	1	13	0.1461	0	1	13	0.1294	0
	50000	x5	1	5	0.0491	0	28	131	0.7328	5.29E-11	1	13	0.1254	0	1	13	0.1234	0
	50000	x6	1	5	0.0629	0	29	140	0.7186	0	1	13	0.1327	0	1	13	0.1195	0