Table 1: Test results of the four methods for problem 3.1

Pnum	Nvars	Ipt	SHZM				ACGD				DLP				NMPD			
			NIT	FE	PT	Norm	NIT	FE	PT	Norm	NIT	FE	PT	Norm	NIT	FE	PT	Norm
3.1	1000	x1	2	25	0.0200	0	–	–	–	–	16	30	0.0391	3.1760E-09	–	–	–	–
	1000	x2	1	13	0.0130	0	17	52	0.0287	0	15	31	0.0121	4.4039E-09	–	–	–	–
	1000	x3	1	13	0.0091	0	15	47	0.0493	0	14	34	0.0177	7.1159E-09	8	60	0.03588	0
	1000	x4	2	25	0.0162	0	16	37	0.0419	4.3072E-09	19	40	0.0197	3.1583E-09	–	–	–	–
	1000	x5	2	25	0.0144	0	16	37	0.0362	4.3749E-09	16	30	0.0252	4.5665E-09	–	–	–	–
	1000	x6	1	13	0.0095	0	1	13	0.0087	0	11	25	0.0091	1.6478E-09	1	13	0.00315	0
	1000	x7	1	13	0.0186	0	1	13	0.0072	0	1	13	0.0058	0	1	13	0.00654	0
	5000	x1	2	25	0.0356	0	15	39	0.0797	0	16	30	0.0619	7.1018E-09	6	61	0.06145	0
	5000	x2	1	13	0.0221	0	–	–	–	–	15	31	0.0656	9.8475E-09	–	–	–	–
	5000	x3	1	13	0.0221	0	–	–	–	–	17	50	0.0648	6.3521E-09	–	–	–	–
	5000	x4	2	25	0.0409	0	18	39	0.0856	2.6925E-09	21	46	0.0659	9.5227E-09	1	13	0.01259	0
	5000	x5	2	25	0.0358	0	18	39	0.0970	2.7014E-09	16	30	0.0484	7.2094E-09	1	13	0.01192	0
	5000	x6	1	13	0.0288	0	1	13	0.0338	0	14	47	0.0775	3.2391E-09	6	55	0.09145	0
	5000	x7	1	13	0.0376	0	1	13	0.0181	0	1	13	0.0133	0	–	–	–	–
	10000	x1	2	25	0.0631	0	19	55	0.2027	9.6707E-09	16	35	0.1067	3.0959E-09	–	–	–	–
	10000	x2	1	13	0.0581	0	19	54	0.2039	3.5804E-09	18	37	0.1005	1.8124E-09	–	–	–	–
	10000	x3	1	13	0.0418	0	18	39	0.1775	3.9058E-09	21	59	0.1348	1.7436E-09	–	–	–	–
	10000	x4	2	25	0.0600	0	18	39	0.1654	3.9122E-09	18	32	0.1027	7.9916E-09	–	–	–	–
	10000	x5	2	25	0.0551	0	1	13	0.0343	0	18	31	0.0819	2.2103E-09	–	–	–	–
	10000	x6	1	13	0.0566	0	1	13	0.0244	0	14	47	0.1044	4.5808E-09	1	13	0.01598	0
	10000	x7	1	13	0.0402	0	–	–	–	–	1	13	0.0200	0	1	13	0.0178	0

Table 2: Test results of the four methods for problem 3.2

Pnum	Nvars	Ipt	SHZM				ACGD				DLP				NMPD			
			NIT	FE	PT	Norm	NIT	FE	PT	Norm	NIT	FE	PT	Norm	NIT	FE	PT	Norm
3.2	1000	x1	2	25	0.0293	0	15	65	0.0500	3.5068E-09	21	69	0.0202	8.9876E-09	–	–	–	–
	1000	x2	2	25	0.0246	0	14	66	0.0298	2.6660E-09	22	73	0.0209	4.5086E-09	–	–	–	–
	1000	x3	2	25	0.0102	0	15	74	0.0562	2.8568E-09	22	74	0.0211	3.8555E-09	–	–	–	–
	1000	x4	2	25	0.0211	0	14	58	0.0330	4.5104E-09	21	68	0.0219	3.8110E-09	–	–	–	–
	1000	x5	3	37	0.0176	0	14	58	0.0462	4.4844E-09	21	68	0.0198	3.7539E-09	–	–	–	–
	1000	x6	2	25	0.0146	0	5	37	0.0193	0	24	84	0.0290	7.1860E-09	–	–	–	–
	1000	x7	5	61	0.0424	0	2	25	0.0201	0	2	25	0.0069	0	–	–	–	–
	5000	x1	2	25	0.0423	0	14	65	0.1436	7.8423E-09	22	72	0.1136	7.7872E-09	–	–	–	–
	5000	x2	2	25	0.0807	0	14	66	0.1395	6.8232E-09	23	77	0.1309	4.8854E-09	–	–	–	–
	5000	x3	2	25	0.0513	0	16	74	0.1563	6.4767E-09	24	83	0.1062	5.2409E-09	–	–	–	–
	5000	x4	2	25	0.0430	0	15	62	0.1230	1.9759E-09	22	68	0.1081	8.4393E-09	–	–	–	–
	5000	x5	3	37	0.0881	0	15	62	0.1429	1.9736E-09	22	68	0.1239	8.4134E-09	–	–	–	–
	5000	x6	2	25	0.0354	0	7	44	0.0803	0	25	99	0.1644	4.5030E-09	–	–	–	–
	5000	x7	4	49	0.0907	0	2	25	0.0621	0	2	25	0.0233	0	–	–	–	–
	10000	x1	2	25	0.1084	0	15	69	0.2316	2.1024E-09	23	75	0.1784	3.8789E-09	–	–	–	–
	10000	x2	2	25	0.0894	0	15	66	0.2470	9.7809E-09	23	77	0.1836	6.9055E-09	–	–	–	–
	10000	x3	2	25	0.0759	0	15	74	0.2250	9.1846E-09	24	83	0.1919	5.8589E-09	–	–	–	–
	10000	x4	2	25	0.1005	0	15	62	0.2121	2.8269E-09	23	71	0.1726	4.1959E-09	–	–	–	–
	10000	x5	3	37	0.1568	0	15	62	0.2327	2.8253E-09	23	71	0.1755	4.1894E-09	–	–	–	–
	10000	x6	2	25	0.0855	0	9	59	0.1752	0	26	106	0.2541	7.1498E-09	–	–	–	–
	10000	x7	4	49	0.1540	0	2	25	0.0844	0	2	25	0.0479	0	–	–	–	–

Table 3: Test results of the four methods for problem 3.3

Pnum	Nvars	Ipt	SHZM				ACGD				DLP				NMPD			
			NIT	FE	PT	Norm	NIT	FE	PT	Norm	NIT	FE	PT	Norm	NIT	FE	PT	Norm
3.3	1000	x1	2	25	0.0491	0	—	—	—	—	—	—	—	—	—	—	—	—
	1000	x2	2	25	0.0363	0	—	—	—	—	—	—	—	—	—	—	—	—
	1000	x3	2	25	0.0268	0	—	—	—	—	—	—	—	—	—	—	—	—
	1000	x4	2	25	0.0265	0	—	—	—	—	—	—	—	—	—	—	—	—
	1000	x5	2	25	0.0273	0	—	—	—	—	—	—	—	—	—	—	—	—
	1000	x6	2	25	0.0463	0	—	—	—	—	—	—	—	—	—	—	—	—
	1000	x7	2	25	0.0289	0	—	—	—	—	—	—	—	—	—	—	—	—
	5000	x1	2	25	0.1266	0	—	—	—	—	—	—	—	—	—	—	—	—
	5000	x2	2	25	0.1027	0	—	—	—	—	—	—	—	—	—	—	—	—
	5000	x3	2	25	0.0992	0	—	—	—	—	—	—	—	—	—	—	—	—
	5000	x4	2	25	0.0966	0	—	—	—	—	—	—	—	—	—	—	—	—
	5000	x5	2	25	0.1125	0	—	—	—	—	—	—	—	—	—	—	—	—
	5000	x6	2	25	0.1044	0	—	—	—	—	—	—	—	—	—	—	—	—
	5000	x7	2	25	0.1053	0	—	—	—	—	—	—	—	—	—	—	—	—
	10000	x1	2	25	0.1871	0	—	—	—	—	—	—	—	—	—	—	—	—
	10000	x2	2	25	0.1709	0	—	—	—	—	—	—	—	—	—	—	—	—
	10000	x3	2	25	0.1886	0	—	—	—	—	—	—	—	—	—	—	—	—
	10000	x4	2	25	0.1842	0	—	—	—	—	—	—	—	—	—	—	—	—
	10000	x5	2	25	0.1504	0	—	—	—	—	—	—	—	—	—	—	—	—
	10000	x6	2	25	0.1869	0	—	—	—	—	—	—	—	—	—	—	—	—
	10000	x7	2	25	0.1920	0	—	—	—	—	—	—	—	—	—	—	—	—

Table 4: Test results of the four methods for problem 3.4

Pnum	Nvars	Ipt	SHZM				ACGD				DLP				NMPD			
			NIT	FE	PT	Norm	NIT	FE	PT	Norm	NIT	FE	PT	Norm	NIT	FE	PT	Norm
3.4	1000	x1	4	38	0.0183	0	11	18	0.0174	0	14	28	0.0191	6.3387E-09	−	−	−	−
	1000	x2	7	73	0.0315	0	24	95	0.0746	0	13	17	0.0153	3.5880E-09	10	102	0.0300	0
	1000	x3	18	203	0.0786	0	22	78	0.0400	0	16	34	0.0235	3.2473E-09	−	−	−	−
	1000	x4	6	62	0.0334	0	12	32	0.0496	0	16	29	0.0148	1.6676E-09	2	14	0.0061	0
	1000	x5	6	62	0.0281	0	16	49	0.0553	0	17	32	0.0174	4.7949E-09	2	14	0.0061	0
	1000	x6	3	15	0.0103	0	7	9	0.0288	0	13	15	0.0116	3.9725E-09	3	21	0.0087	0
	1000	x7	4	16	0.0317	0	10	12	0.0352	0	16	18	0.0198	1.2776E-09	5	46	0.0173	0
	5000	x1	4	38	0.0850	0	19	46	0.1589	0	18	33	0.0784	1.2034E-09	−	−	−	−
	5000	x2	7	73	0.1455	0	12	21	0.0918	0	13	17	0.0508	6.0894E-09	7	73	0.0718	0
	5000	x3	7	71	0.1365	0	13	22	0.0972	0	17	32	0.0639	4.9163E-09	−	−	−	−
	5000	x4	6	62	0.1210	0	13	25	0.1353	0	18	31	0.0644	4.5253E-09	2	14	0.0148	0
	5000	x5	6	62	0.1229	0	12	24	0.1150	0	18	40	0.0819	2.0320E-09	2	14	0.0205	0
	5000	x6	3	15	0.0553	0	7	9	0.0453	0	14	18	0.0517	6.4696E-09	4	39	0.2106	0
	5000	x7	4	16	0.0607	0	9	11	0.0475	0	19	28	0.0828	0	6	67	0.1376	0
	10000	x1	4	38	0.1392	0	14	37	0.2229	0	17	27	0.1120	4.3170E-09	−	−	−	−
	10000	x2	7	73	0.2309	0	12	21	0.1685	0	14	18	0.0900	2.5432E-09	−	−	−	−
	10000	x3	5	47	0.1819	0	15	26	0.1868	0	16	29	0.1232	2.7320E-09	−	−	−	−
	10000	x4	6	62	0.2114	0	16	45	0.2225	0	19	33	0.1289	3.1972E-09	2	14	0.0389	0
	10000	x5	6	62	0.2226	0	17	46	0.2462	0	19	32	0.1348	5.3086E-09	2	14	0.0508	0
	10000	x6	3	15	0.0657	0	7	9	0.0852	0	16	23	0.1291	1.2138E-09	5	56	0.2005	0
	10000	x7	4	16	0.0677	0	9	11	0.1381	0	22	42	0.1529	8.1259E-09	6	70	0.2327	0

4

Table 5: Test results of the four methods for problem 3.5

Pnum	Nvars	Ipt	SHZM				ACGD				DLP				NMPD			
			NIT	FE	PT	Norm	NIT	FE	PT	Norm	NIT	FE	PT	Norm	NIT	FE	PT	Norm
3.5	1000	x1	2	25	0.0230	0	14	31	0.0446	0	18	38	0.0138	0	7	58	0.0434	0
	1000	x2	2	25	0.0304	0	15	34	0.0273	0	18	38	0.0229	0	–	–	–	–
	1000	x3	2	25	0.0106	0	14	32	0.0465	0	17	38	0.0135	0	–	–	–	–
	1000	x4	2	17	0.0259	0	15	32	0.0347	0	15	26	0.0175	0	–	–	–	–
	1000	x5	2	17	0.0127	0	15	33	0.0194	0	18	45	0.0170	0	–	–	–	–
	1000	x6	1	13	0.0163	0	13	30	0.0206	0	10	16	0.0091	0	4	35	0.0106	0
	1000	x7	1	13	0.0170	0	14	33	0.0218	0	12	25	0.0175	0	4	31	0.0325	0
	5000	x1	2	25	0.0427	0	14	31	0.1249	0	16	30	0.0627	0	11	123	0.2095	0
	5000	x2	2	25	0.0426	0	15	34	0.1125	0	19	39	0.1146	0	–	–	–	–
	5000	x3	2	25	0.0391	0	13	30	0.1266	0	19	48	0.0846	0	–	–	–	–
	5000	x4	2	17	0.0328	0	13	28	0.0861	0	15	26	0.0603	0	–	–	–	–
	5000	x5	2	17	0.0329	0	13	28	0.1020	0	20	43	0.0780	0	–	–	–	–
	5000	x6	1	13	0.0318	0	17	39	0.1033	0	14	31	0.0596	0	4	35	0.0467	0
	5000	x7	1	13	0.0496	0	13	31	0.0885	0	18	58	0.0968	0	5	41	0.0816	0
	10000	x1	2	25	0.0886	0	15	33	0.1468	0	16	30	0.1119	0	–	–	–	–
	10000	x2	2	25	0.0774	0	15	34	0.1922	0	22	51	0.1667	0	–	–	–	–
	10000	x3	2	25	0.0835	0	16	36	0.2051	0	22	51	0.1665	0	–	–	–	–
	10000	x4	2	17	0.0509	0	15	41	0.1792	0	18	41	0.1194	0	–	–	–	–
	10000	x5	2	17	0.0707	0	13	28	0.1543	0	23	51	0.1371	0	–	–	–	–
	10000	x6	1	13	0.0797	0	12	28	0.1413	0	15	37	0.1133	0	4	34	0.0717	0
	10000	x7	1	13	0.0389	0	18	41	0.1651	0	22	82	0.1862	0	6	55	0.1844	0

Table 6: Test results of the four methods for problem 3.6

Pnum	Nvars	Ipt	SHZM				ACGD				DLP				NMPD			
			NIT	FE	PT	Norm	NIT	FE	PT	Norm	NIT	FE	PT	Norm	NIT	FE	PT	Norm
3.6	1000	x1	1	13	0.0155	0	1	13	0.0091	0	1	13	0.0136	0	1	13	0.0077	0
	1000	x2	1	13	0.0094	0	1	13	0.0139	0	1	13	0.0070	0	1	13	0.0095	0
	1000	x3	1	13	0.0102	0	1	13	0.0067	0	1	13	0.0049	0	1	13	0.0200	0
	1000	x4	1	13	0.0194	0	1	13	0.0151	0	1	13	0.0069	0	1	13	0.0218	0
	1000	x5	1	13	0.0186	0	1	13	0.0200	0	1	13	0.0054	0	1	13	0.0087	0
	1000	x6	1	13	0.0145	0	1	13	0.0067	0	1	13	0.0048	0	1	13	0.0093	0
	1000	x7	1	13	0.0142	0	1	13	0.0117	0	1	13	0.0048	0	1	13	0.0093	0
	5000	x1	1	13	0.0421	0	1	13	0.0356	0	1	13	0.0137	0	1	13	0.0222	0
	5000	x2	1	13	0.0150	0	1	13	0.0206	0	1	13	0.0138	0	1	13	0.0438	0
	5000	x3	1	13	0.0215	0	1	13	0.0208	0	1	13	0.0134	0	1	13	0.0214	0
	5000	x4	1	13	0.0433	0	1	13	0.0281	0	1	13	0.0135	0	1	13	0.0314	0
	5000	x5	1	13	0.0289	0	1	13	0.0196	0	1	13	0.0137	0	1	13	0.0355	0
	5000	x6	1	13	0.0353	0	1	13	0.0189	0	1	13	0.0131	0	1	13	0.0198	0
	5000	x7	1	13	0.0203	0	1	13	0.0368	0	1	13	0.0139	0	1	13	0.0296	0
	10000	x1	1	13	0.0404	0	1	13	0.0350	0	1	13	0.0227	0	1	13	0.0327	0
	10000	x2	1	13	0.0348	0	1	13	0.0322	0	1	13	0.0243	0	1	13	0.0314	0
	10000	x3	1	13	0.0318	0	1	13	0.0542	0	1	13	0.0188	0	1	13	0.0478	0
	10000	x4	1	13	0.0226	0	1	13	0.0323	0	1	13	0.0232	0	1	13	0.0543	0
	10000	x5	1	13	0.0226	0	1	13	0.0493	0	1	13	0.0237	0	1	13	0.0427	0
	10000	x6	1	13	0.0234	0	1	13	0.0543	0	1	13	0.0197	0	1	13	0.0281	0
	10000	x7	1	13	0.0270	0	1	13	0.0497	0	1	13	0.0153	0	1	13	0.0425	0

Table 7: Test results of the four methods for problem 3.7

Pnum	Nvars	Ipt	SHZM				ACGD				DLP				NMPD			
			NIT	FE	PT	Norm	NIT	FE	PT	Norm	NIT	FE	PT	Norm	NIT	FE	PT	Norm
3.7	1000	x1	4	49	0.0216	0	34	246	0.1088	8.8730E-09	12	85	0.0265	0	–	–	–	–
	1000	x2	5	61	0.0408	0	52	376	0.2128	9.7685E-09	75	479	0.1388	3.2131E-09	–	–	–	–
	1000	x3	6	62	0.0659	0	54	391	0.2067	6.8230E-09	62	354	0.1434	6.6984E-09	–	–	–	–
	1000	x4	3	37	0.0327	0	5	52	0.0301	0	33	257	0.1108	0	5	34	0.0166	0
	1000	x5	3	37	0.0324	0	59	466	0.2640	7.2649E-09	49	283	0.1100	5.5437E-09	–	–	–	–
	1000	x6	2	25	0.0125	0	4	30	0.0570	0	4	36	0.0146	0	20	101	0.0424	0
	1000	x7	2	14	0.0190	0	2	25	0.0244	0	2	25	0.0083	0	2	14	0.0089	0
	5000	x1	4	49	0.1643	0	51	368	0.7555	8.4208E-09	5	29	0.0665	0	14	119	0.3060	0
	5000	x2	5	61	0.1201	0	56	406	0.8067	0	48	283	0.4076	5.6757E-09	–	–	–	–
	5000	x3	6	62	0.1928	0	48	349	0.7303	7.0074E-09	55	316	0.4402	3.2294E-09	14	92	0.1776	0
	5000	x4	4	38	0.1027	0	4	33	0.0812	0	7	75	0.1308	0	51	90	0.3429	0
	5000	x5	3	37	0.0988	0	–	–	–	–	–	–	–	–	4	21	0.0915	0
	5000	x6	2	14	0.0643	0	3	30	0.0563	0	3	26	0.0380	0	2	14	0.0564	0
	5000	x7	2	14	0.0688	0	2	14	0.0411	0	2	14	0.0309	0	2	14	0.0397	0
	10000	x1	4	49	0.1625	0	75	538	1.7755	9.8675E-09	5	29	0.1097	0	14	121	0.4711	0
	10000	x2	5	61	0.2214	0	56	411	1.3987	0	55	301	0.7749	6.6958E-09	–	–	–	–
	10000	x3	6	62	0.2484	0	51	370	1.3060	7.8892E-09	79	497	1.2296	5.4829E-09	18	112	0.3648	0
	10000	x4	4	38	0.1997	0	8	80	0.3043	0	3	27	0.1082	0	5	44	0.1895	0
	10000	x5	3	37	0.1329	0	–	–	–	–	190	1743	3.7092	7.5137E-09	4	22	0.1117	0
	10000	x6	2	14	0.0985	0	3	30	0.1099	0	3	26	0.0912	0	2	14	0.0905	0
	10000	x7	2	14	0.0580	0	2	14	0.0800	0	2	14	0.0484	0	2	14	0.0691	0