

Solução do Problema maros - Solver HiGHS

Análise Computacional

16 de setembro de 2025

1 Informações do Problema

Informações do Problema:

- Nome: maros
- Número de Variáveis: 1443
- Número de Restrições: 846
- Inviabilidade Primal: 8.882e-14
- Inviabilidade Dual: 1.271e-15
- Valor Primal: -5.806e+04
- Valor Dual: -2.307e+04
- Gap: -3.237e-21
- Número de Iterações: 24

2 Variáveis Primais e Custos Reduzidos

Tabela 1: Variáveis primais e custos reduzidos do problema maros

Coordenada x	Valor x	Coordenada z	Valor z
1	6057.814197	1	0.000000
2	1550.000000	2	-3.840551
3	120.000000	3	-2.034178
4	-0.000000	4	0.000000
5	17.200000	5	-1.860000
6	-0.000000	6	0.000000
7	138.000000	7	0.000000
8	363.000000	8	0.000000
9	0.000000	9	-0.725769
10	0.000000	10	84.844502
11	0.000000	11	0.691579
12	75.000000	12	-1.775820

Continua na próxima página

Coordenada x	Valor x	Coordenada z	Valor z
13	99.239108	13	0.000000
14	230.860079	14	0.000000
15	364.000000	15	0.000000
16	79.478691	16	0.000000
17	-0.000000	17	0.000000
18	319.431555	18	0.000000
19	-0.000000	19	0.000000
20	-0.000000	20	0.000000
21	1.403039	21	0.000000
22	1185.387097	22	0.000000
23	363.000000	23	0.000000
24	0.000000	24	1.183576
25	-0.000000	25	0.000000
26	-0.000000	26	0.000000
27	0.000000	27	0.343223
28	364.612903	28	0.000000
29	0.000000	29	1.312734
30	0.000000	30	0.139496
31	2464.106826	31	0.000000
32	0.000000	32	0.032866
33	0.000000	33	0.032866
34	-0.000000	34	0.000000
35	1932.448921	35	0.000000
36	0.000000	36	-0.000000
37	1661.258450	37	0.000000
38	120.000000	38	0.000000
39	0.000000	39	0.000000
40	-0.000000	40	0.000000
41	0.000000	41	0.131873
42	0.000000	42	0.127333
43	0.000000	43	0.131873
44	-0.000000	44	0.000000
45	-0.000000	45	0.000000
46	-0.000000	46	0.000000
47	1427.123958	47	0.000000
48	0.000000	48	4.574895
49	-0.000000	49	0.000000
50	0.000000	50	5.934055
51	-0.000000	51	0.000000
52	0.000000	52	1.136522
53	-0.000000	53	0.000000
54	0.000000	54	26.362163
55	-0.000000	55	0.000000
56	-0.000000	56	0.000000
57	2.013980	57	0.000000
58	328.238510	58	0.000000
59	0.000000	59	0.001875
60	0.000000	60	0.001875
61	80.783876	61	0.000000

Continua na próxima página

Coordenada x	Valor x	Coordenada z	Valor z
62	0.000000	62	0.269799
63	-0.000000	63	0.000000
64	-0.000000	64	0.000000
65	-0.000000	65	0.000000
66	0.000000	66	0.068686
67	169.363064	67	0.000000
68	195.113322	68	0.000000
69	-0.000000	69	0.000000
70	0.000000	70	0.068421
71	0.000000	71	0.268659
72	0.000000	72	18.121625
73	0.000000	73	16.045095
74	0.000000	74	16.045095
75	0.000000	75	16.045095
76	-0.000000	76	0.000000
77	0.000000	77	40.453613
78	-0.000000	78	0.000000
79	-0.000000	79	0.000000
80	0.000000	80	3.348451
81	0.000000	81	1.017320
82	0.000000	82	0.636077
83	0.000000	83	0.254830
84	-0.000000	84	0.000000
85	102.236241	85	0.000000
86	13.359457	86	0.000000
87	94.333083	87	0.000000
88	-0.000000	88	0.000000
89	130.404388	89	0.000000
90	0.000000	90	0.254873
91	0.000000	91	0.392292
92	22.244318	92	0.000000
93	0.000000	93	1.044716
94	0.000000	94	4.776617
95	23.445359	95	0.000000
96	25.201260	96	0.000000
97	21.176471	97	0.000000
98	0.000000	98	10.213812
99	75.000000	99	0.000000
100	319.431555	100	0.000000
101	336.934269	101	0.000000
102	8.654672	102	0.000000
103	0.000000	103	3.749073
104	0.000000	104	33.364651
105	-0.000000	105	0.000000
106	-0.000000	106	0.000000
107	0.000000	107	10.604503
108	13.785871	108	0.000000
109	5.507547	109	0.000000
110	-0.000000	110	0.000000

Continua na próxima página

Coordenada x	Valor x	Coordenada z	Valor z
111	0.000000	111	2.501282
112	0.000000	112	2.873973
113	0.000000	113	1.482131
114	-0.000000	114	0.000000
115	0.000000	115	0.648893
116	176.849187	116	0.000000
117	-0.000000	117	0.000000
118	-0.000000	118	0.000000
119	97.032267	119	0.000000
120	-0.000000	120	0.000000
121	20.032116	121	0.000000
122	155.111364	122	0.000000
123	137.220774	123	0.000000
124	-0.000000	124	0.000000
125	70.739675	125	0.000000
126	31.535487	126	0.000000
127	-0.000000	127	0.000000
128	-0.000000	128	0.000000
129	-0.000000	129	0.000000
130	0.000000	130	0.097700
131	0.000000	131	0.720079
132	-0.000000	132	0.000000
133	51.286264	133	0.000000
134	19.205111	134	0.000000
135	82.209023	135	0.000000
136	24.843237	136	0.000000
137	-0.000000	137	0.000000
138	-0.000000	138	0.000000
139	15.224408	139	0.000000
140	98.112854	140	0.000000
141	19.874590	141	0.000000
142	0.000000	142	2.900642
143	0.000000	143	5.688259
144	0.000000	144	5.591026
145	-0.000000	145	0.000000
146	8.830157	146	0.000000
147	62.067812	147	0.000000
148	51.999812	148	0.000000
149	-0.000000	149	0.000000
150	15.748191	150	0.000000
151	22.565956	151	0.000000
152	57.061399	152	0.000000
153	10.841666	153	0.000000
154	18.259648	154	0.000000
155	11.412280	155	0.000000
156	26.773208	156	0.000000
157	748.074807	157	0.000000
158	-0.000000	158	0.000000
159	0.000000	159	1.823796

Continua na próxima página

Coordenada x	Valor x	Coordenada z	Valor z
160	0.000000	160	2.921755
161	-0.000000	161	0.000000
162	-0.000000	162	0.000000
163	0.000000	163	6.377755
164	-0.000000	164	0.000000
165	-0.000000	165	0.000000
166	0.000000	166	0.940918
167	0.000000	167	0.048020
168	0.000000	168	0.059834
169	-0.000000	169	0.000000
170	0.000000	170	12.315052
171	0.000000	171	5.546086
172	0.000000	172	2.316992
173	0.000000	173	0.050930
174	540.683007	174	0.000000
175	-0.000000	175	0.000000
176	173.317147	176	0.000000
177	87.524752	177	0.000000
178	14.035616	178	0.000000
179	0.000000	179	0.266772
180	200.000000	180	0.000000
181	-0.000000	181	0.000000
182	2126.696933	182	0.000000
183	114147.366778	183	0.000000
184	191444.083367	184	0.000000
185	26.783331	185	0.000000
186	0.000000	186	0.625806
187	30.077909	187	0.000000
188	0.000000	188	15.164732
189	0.000000	189	6.772498
190	80.508329	190	0.000000
191	0.000000	191	2.845197
192	0.000000	192	4.601847
193	29.262059	193	0.000000
194	0.000000	194	1.024553
195	0.000000	195	52.866080
196	0.000000	196	2.922220
197	36.812210	197	0.000000
198	2.830641	198	0.000000
199	83.664206	199	0.000000
200	0.000000	200	37.100887
201	0.000000	201	0.695364
202	0.000000	202	3.803887
203	0.000000	203	8.449595
204	0.000000	204	10.125274
205	0.000000	205	23.791034
206	0.000000	206	0.879219
207	0.000000	207	16.896496
208	-0.000000	208	0.000000

Continua na próxima página

Coordenada x	Valor x	Coordenada z	Valor z
209	0.000000	209	0.957528
210	0.000000	210	0.167499
211	6.330730	211	0.000000
212	0.000000	212	23.298972
213	0.000000	213	16.897301
214	0.000000	214	4.170190
215	0.000000	215	31.348896
216	0.000000	216	3.806534
217	74.680728	217	0.000000
218	-0.000000	218	0.000000
219	0.553778	219	0.000000
220	0.000000	220	8.000551
221	0.000000	221	9.670300
222	218.299380	222	0.000000
223	46784.107579	223	0.000000
224	545.748450	224	0.000000
225	371.503922	225	0.000000
226	-0.000000	226	0.000000
227	0.000000	227	7.667032
228	0.000000	228	19.446656
229	0.000000	229	3.633259
230	0.000000	230	10.701309
231	0.000000	231	9.676756
232	0.000000	232	10.598570
233	0.000000	233	1.278016
234	0.000000	234	3.120724
235	-0.000000	235	0.000000
236	-0.000000	236	0.000000
237	0.000000	237	2.971325
238	0.000000	238	22.506927
239	0.000000	239	3.850543
240	0.000000	240	2.908173
241	0.000000	241	10.695029
242	-0.000000	242	0.000000
243	0.000000	243	3.991649
244	-0.000000	244	0.000000
245	0.000000	245	20.708526
246	0.000000	246	18.321659
247	0.000000	247	1.895862
248	0.000000	248	0.000000
249	-0.000000	249	0.000000
250	-0.000000	250	0.000000
251	-0.000000	251	0.000000
252	-0.000000	252	0.000000
253	34.693212	253	0.000000
254	0.000000	254	1.061172
255	0.000000	255	0.341572
256	0.000000	256	1.078729
257	0.000000	257	16.647834

Continua na próxima página

Coordenada x	Valor x	Coordenada z	Valor z
258	0.000000	258	3.997029
259	0.000000	259	0.448408
260	0.000000	260	0.596184
261	0.000000	261	1.374970
262	35.249123	262	0.000000
263	0.000000	263	1.024553
264	104.717833	264	0.000000
265	0.000000	265	10.445869
266	0.000000	266	52.089315
267	0.000000	267	2.542854
268	0.000000	268	2.944387
269	4.474211	269	0.000000
270	0.000000	270	0.748319
271	0.000000	271	1.323273
272	0.000000	272	1.414809
273	0.000000	273	37.543031
274	0.000000	274	0.722240
275	0.000000	275	0.510047
276	0.000000	276	23.767915
277	0.000000	277	2.294028
278	0.000000	278	3.697813
279	0.000000	279	16.575194
280	0.000000	280	0.678486
281	0.000000	281	6.316615
282	0.000000	282	0.167164
283	138.000000	283	0.000000
284	-0.000000	284	0.000000
285	6.023533	285	0.000000
286	0.000000	286	24.529601
287	0.000000	287	16.853244
288	0.000000	288	4.341091
289	156.179351	289	0.000000
290	0.000000	290	0.000000
291	0.662737	291	0.000000
292	0.000000	292	5.919800
293	0.000000	293	7.465362
294	261.250886	294	0.000000
295	480.000000	295	0.000000
296	653.127216	296	0.000000
297	36613.289549	297	0.000000
298	-0.000000	298	0.000000
299	0.000000	299	22.040844
300	0.000000	300	5.545944
301	0.000000	301	45.866633
302	0.000000	302	66.301368
303	0.000000	303	50.045303
304	0.000000	304	62.728853
305	0.000000	305	58.618674
306	0.000000	306	8.617809

Continua na próxima página

Coordenada x	Valor x	Coordenada z	Valor z
307	0.000000	307	1.062053
308	-0.000000	308	0.000000
309	0.000000	309	70.573218
310	0.000000	310	19.427831
311	0.000000	311	16.678394
312	0.000000	312	16.243413
313	0.000000	313	46.722303
314	0.000000	314	31.967971
315	0.000000	315	35.594188
316	0.000000	316	78.415262
317	0.000000	317	51.758564
318	0.000000	318	61.203705
319	0.000000	319	48.742416
320	0.000000	320	36.473407
321	0.000000	321	19.362947
322	0.000000	322	35.771797
323	0.000000	323	16.846845
324	-0.000000	324	0.000000
325	0.000000	325	11.018750
326	0.000000	326	16.091568
327	-0.000000	327	0.000000
328	0.000000	328	28.917910
329	0.000000	329	27.731391
330	0.000000	330	21.718797
331	-0.000000	331	0.000000
332	-0.000000	332	0.000000
333	-0.000000	333	0.000000
334	0.000000	334	0.003551
335	0.000000	335	0.000000
336	-0.000000	336	0.000000
337	-0.000000	337	0.000000
338	-0.000000	338	0.000000
339	-0.000000	339	0.000000
340	15.494074	340	0.000000
341	0.000000	341	1.274071
342	1.376887	342	0.000000
343	44.490927	343	0.000000
344	0.000000	344	19.429354
345	0.000000	345	3.590647
346	0.000000	346	0.476754
347	3.469755	347	0.000000
348	0.000000	348	10.591524
349	0.000000	349	53.382900
350	0.000000	350	0.061241
351	297.048255	351	0.000000
352	77.590608	352	0.000000
353	8.958847	353	0.000000
354	0.000000	354	2.952538
355	0.000000	355	1.502105

Continua na próxima página

Coordenada x	Valor x	Coordenada z	Valor z
356	0.000000	356	3.831757
357	0.000000	357	0.954847
358	0.000000	358	14.058843
359	0.000000	359	0.383385
360	16.617449	360	0.000000
361	4.141583	361	0.000000
362	0.000000	362	20.989802
363	0.000000	363	14.421224
364	-0.000000	364	0.000000
365	1041.848199	365	0.000000
366	0.000000	366	0.000000
367	37009.369912	367	0.000000
368	643.295018	368	0.000000
369	469.188384	369	0.000000
370	10.293768	370	0.000000
371	0.000000	371	1.532284
372	29.779829	372	0.000000
373	0.000000	373	19.008373
374	3.407135	374	0.000000
375	2.606961	375	0.000000
376	0.000000	376	1.466167
377	0.000000	377	10.401963
378	0.000000	378	51.809575
379	0.000000	379	2.360263
380	0.000000	380	2.833610
381	0.000000	381	0.396368
382	0.000000	382	0.121393
383	0.000000	383	1.416874
384	0.000000	384	36.779384
385	0.000000	385	23.433835
386	0.000000	386	2.296093
387	0.000000	387	3.501206
388	0.000000	388	15.910482
389	0.000000	389	6.406039
390	82.621659	390	0.000000
391	14.321764	391	0.000000
392	0.000000	392	22.496610
393	0.000000	393	16.308777
394	-0.000000	394	0.000000
395	0.186524	395	0.000000
396	0.000000	396	4.238616
397	0.000000	397	5.072995
398	73.527807	398	0.000000
399	8271.878253	399	0.000000
400	183.819517	400	0.000000
401	143.217641	401	0.000000
402	-0.000000	402	0.000000
403	0.000000	403	13.656214
404	-0.000000	404	0.000000

Continua na próxima página

Coordenada x	Valor x	Coordenada z	Valor z
405	0.000000	405	15.499267
406	0.000000	406	18.120495
407	0.000000	407	21.202367
408	0.000000	408	41.437673
409	0.000000	409	73.660009
410	0.000000	410	80.729363
411	0.000000	411	83.297808
412	0.000000	412	20.989816
413	0.000000	413	22.427778
414	0.000000	414	4.062033
415	0.000000	415	9.946968
416	-0.000000	416	0.000000
417	-0.000000	417	0.000000
418	0.000000	418	30.816754
419	-0.000000	419	0.000000
420	-0.000000	420	0.000000
421	0.000000	421	11.882107
422	-0.000000	422	0.000000
423	0.000000	423	0.000000
424	-0.000000	424	0.000000
425	-0.000000	425	0.000000
426	-0.000000	426	0.000000
427	-0.000000	427	0.000000
428	0.000000	428	4.262514
429	0.000000	429	0.068421
430	121.305536	430	0.000000
431	0.000000	431	4.963434
432	0.000000	432	2.178857
433	82.569472	433	0.000000
434	12.108666	434	0.000000
435	40.420722	435	0.000000
436	0.000000	436	2.252851
437	11.039160	437	0.000000
438	0.000000	438	12.693821
439	30.521452	439	0.000000
440	114.169917	440	0.000000
441	323.370282	441	0.000000
442	0.000000	442	0.070296
443	0.000000	443	9.956951
444	0.000000	444	0.068421
445	0.000000	445	0.068421
446	47.497751	446	0.000000
447	0.000000	447	9.077733
448	0.000000	448	4.730000
449	0.000000	449	4.730000
450	0.000000	450	19.565252
451	1110.463540	451	0.000000
452	783.002959	452	0.000000
453	0.476121	453	0.000000

Continua na próxima página

Coordenada x	Valor x	Coordenada z	Valor z
454	0.000000	454	14.631129
455	0.000000	455	23.698176
456	0.000000	456	34.305585
457	8.252766	457	0.000000
458	8.728888	458	0.000000
459	0.000000	459	0.642377
460	0.000000	460	0.756171
461	0.000000	461	6.258264
462	81.113356	462	0.000000
463	123.205341	463	0.000000
464	0.000000	464	0.062891
465	0.000000	465	0.000000
466	197.128546	466	0.000000
467	-0.000000	467	0.000000
468	615.665567	468	0.000000
469	0.000000	469	0.734945
470	0.000000	470	0.860000
471	0.000000	471	0.767472
472	135.942793	472	0.000000
473	0.000000	473	0.039307
474	0.000000	474	1.200000
475	32.759710	475	0.000000
476	0.000000	476	0.996632
477	-0.000000	477	0.000000
478	0.000000	478	0.772483
479	0.000000	479	0.733333
480	0.000000	480	0.000000
481	0.000000	481	0.660753
482	0.000000	482	7.308306
483	0.000000	483	7.308306
484	0.000000	484	0.495172
485	0.000000	485	1.700000
486	0.000000	486	0.580370
487	0.000000	487	3.943785
488	676.867327	488	0.000000
489	0.000000	489	0.762460
490	0.000000	490	0.000000
491	0.000000	491	2.644758
492	-0.000000	492	0.000000
493	0.000000	493	6.659263
494	157.648975	494	0.000000
495	0.000000	495	0.886277
496	0.000000	496	0.876844
497	0.000000	497	1.652810
498	0.000000	498	6.238281
499	2020.331615	499	0.000000
500	62.000000	500	0.000000
501	73.424045	501	0.000000
502	0.000000	502	5.449913

Continua na próxima página

Coordenada x	Valor x	Coordenada z	Valor z
503	0.000000	503	0.077730
504	0.000000	504	0.004815
505	66.658251	505	0.000000
506	7.857805	506	0.000000
507	0.000000	507	0.463922
508	6.000000	508	0.000000
509	103.790135	509	0.000000
510	0.000000	510	0.325365
511	0.000000	511	0.645082
512	0.000000	512	0.483772
513	105.578965	513	0.000000
514	15.235393	514	0.000000
515	0.000000	515	0.626123
516	43.443870	516	0.000000
517	0.000000	517	6.759676
518	0.000000	518	6.680473
519	-0.000000	519	0.000000
520	0.000000	520	0.692362
521	13.618844	521	0.000000
522	0.000000	522	6.346755
523	0.000000	523	3.835789
524	0.000000	524	0.030561
525	-0.000000	525	0.000000
526	79.478691	526	0.000000
527	0.000000	527	2.329908
528	11.044548	528	0.000000
529	-0.000000	529	0.000000
530	0.000000	530	0.704624
531	588.130548	531	0.000000
532	0.000000	532	0.110000
533	0.000000	533	6.368264
534	0.000000	534	0.110000
535	0.000000	535	0.172891
536	0.000000	536	0.110000
537	0.000000	537	0.110000
538	0.000000	538	0.110000
539	0.000000	539	0.110000
540	0.000000	540	0.844945
541	0.000000	541	0.970000
542	0.000000	542	0.877472
543	0.000000	543	0.149307
544	0.000000	544	0.110000
545	0.000000	545	0.110000
546	0.000000	546	0.843333
547	0.000000	547	0.110000
548	0.000000	548	0.770753
549	0.000000	549	0.110000
550	0.000000	550	0.110000
551	0.000000	551	2.754758

Continua na próxima página

Coordenada x	Valor x	Coordenada z	Valor z
552	0.000000	552	0.110000
553	0.000000	553	6.769263
554	0.000000	554	0.110000
555	0.000000	555	0.996277
556	0.000000	556	0.986844
557	0.000000	557	1.762810
558	-0.000000	558	0.000000
559	0.000000	559	0.460000
560	0.000000	560	0.522891
561	0.000000	561	0.460000
562	0.000000	562	0.460000
563	0.000000	563	0.460000
564	0.000000	564	1.227472
565	0.000000	565	0.499307
566	0.000000	566	0.460000
567	0.000000	567	1.456632
568	0.000000	568	0.460000
569	0.000000	569	1.193333
570	0.000000	570	0.460000
571	0.000000	571	0.460000
572	0.000000	572	0.460000
573	0.000000	573	1.346277
574	0.000000	574	1.336844
575	-0.000000	575	0.000000
576	0.000000	576	2.188209
577	386.393397	577	0.000000
578	0.000000	578	0.377717
579	0.000000	579	0.334317
580	152.453059	580	0.000000
581	-0.000000	581	0.000000
582	0.000000	582	0.631455
583	0.000000	583	2.386806
584	0.000000	584	0.793365
585	364.000000	585	0.000000
586	0.000000	586	2.630141
587	0.000000	587	0.645725
588	0.000000	588	0.596249
589	166.416451	589	0.000000
590	0.000000	590	2.234028
591	0.000000	591	0.140299
592	84.198812	592	0.000000
593	0.000000	593	1.385198
594	0.000000	594	1.151945
595	1367.164744	595	0.000000
596	1153.461719	596	0.000000
597	0.000000	597	2.414257
598	0.000000	598	3.935800
599	0.000000	599	0.349933
600	0.000000	600	11.097872

Continua na próxima página

Coordenada x	Valor x	Coordenada z	Valor z
601	-0.000000	601	0.000000
602	0.000000	602	0.333193
603	-0.000000	603	0.000000
604	0.000000	604	1.590998
605	0.000000	605	0.679261
606	0.000000	606	1.484473
607	0.000000	607	1.733092
608	0.000000	608	0.871339
609	-0.000000	609	0.000000
610	0.000000	610	0.188993
611	0.000000	611	1.327723
612	0.000000	612	14.438863
613	0.000000	613	0.176330
614	0.000000	614	0.909635
615	0.000000	615	1.529261
616	-0.000000	616	0.000000
617	-0.000000	617	0.000000
618	0.000000	618	1.476258
619	245.740224	619	0.000000
620	357.315484	620	0.000000
621	0.000000	621	0.106333
622	362.186018	622	0.000000
623	0.000000	623	3.024801
624	0.000000	624	0.328685
625	0.000000	625	1.696499
626	59.112203	626	0.000000
627	0.000000	627	0.266746
628	0.000000	628	2.092881
629	672.167168	629	0.000000
630	364.192419	630	0.000000
631	0.000000	631	0.079362
632	0.000000	632	2.862120
633	0.000000	633	2.869297
634	0.000000	634	0.334718
635	0.000000	635	1.489121
636	0.000000	636	0.848463
637	32632.058188	637	0.000000
638	0.000000	638	0.000000
639	2518.680994	639	0.000000
640	2060.713516	640	0.000000
641	0.000000	641	1.346946
642	0.033614	642	0.000000
643	0.000000	643	0.508063
644	0.000000	644	0.356554
645	5.497976	645	0.000000
646	0.000000	646	3.358794
647	0.000000	647	0.382628
648	0.000000	648	1.545543
649	12.243995	649	0.000000

Continua na próxima página

Coordenada x	Valor x	Coordenada z	Valor z
650	0.000000	650	0.233868
651	1.141228	651	0.000000
652	0.000000	652	0.004029
653	0.000000	653	0.017183
654	2.914401	654	0.000000
655	0.000000	655	2.680395
656	0.000000	656	3.765938
657	0.000000	657	0.501898
658	-0.000000	658	0.000000
659	-0.000000	659	0.000000
660	412.632889	660	0.000000
661	0.000000	661	0.000000
662	26.797672	662	0.000000
663	21.831215	663	0.000000
664	0.000000	664	15.063468
665	0.000000	665	69.771970
666	0.000000	666	12.611757
667	0.000000	667	172.270596
668	0.000000	668	11.175862
669	0.000000	669	18.667688
670	0.000000	670	2.199762
671	-0.000000	671	0.000000
672	0.000000	672	8.635237
673	0.000000	673	33.765747
674	-0.000000	674	0.000000
675	0.000000	675	14.250721
676	0.000000	676	2.079924
677	0.000000	677	13.811066
678	-0.000000	678	0.000000
679	0.000000	679	227.389541
680	0.000000	680	13.303511
681	0.000000	681	4.079059
682	0.000000	682	16.685867
683	0.000000	683	0.000000
684	-0.000000	684	0.000000
685	-0.000000	685	0.000000
686	-0.000000	686	0.000000
687	0.000000	687	11.113106
688	0.000000	688	8.483785
689	0.000000	689	4.540000
690	0.000000	690	4.433667
691	0.000000	691	11.354766
692	0.000000	692	10.929774
693	0.000000	693	5.182377
694	0.000000	694	4.540000
695	0.000000	695	4.540000
696	-0.000000	696	0.000000
697	0.000000	697	11.113106
698	0.000000	698	8.483785

Continua na próxima página

Coordenada x	Valor x	Coordenada z	Valor z
699	0.000000	699	4.540000
700	0.000000	700	4.433667
701	0.000000	701	11.354766
702	0.000000	702	10.929774
703	0.000000	703	5.182377
704	0.000000	704	4.540000
705	0.000000	705	4.540000
706	-0.000000	706	0.000000
707	0.000000	707	6.343659
708	39.489426	708	0.000000
709	67.882186	709	0.000000
710	107.371612	710	0.000000
711	0.000000	711	7.811791
712	0.000000	712	6.701908
713	0.000000	713	9.167750
714	-0.000000	714	0.000000
715	0.000000	715	7.650000
716	0.000000	716	3.615267
717	0.000000	717	3.615267
718	-0.000000	718	0.000000
719	0.000000	719	8.230000
720	0.000000	720	4.195267
721	0.000000	721	4.195267
722	0.000000	722	4.195267
723	0.000000	723	10.390000
724	0.000000	724	10.881599
725	0.000000	725	11.994967
726	-0.000000	726	0.000000
727	0.000000	727	1.604967
728	61.695405	728	0.000000
729	0.000000	729	0.491599
730	0.000000	730	13.506413
731	61.695405	731	0.000000
732	0.000000	732	9.975541
733	0.000000	733	5.196966
734	0.000000	734	7.604967
735	0.000000	735	6.000000
736	0.000000	736	19.506413
737	0.000000	737	6.491599
738	0.000000	738	5.888011
739	0.000000	739	8.483422
740	-0.000000	740	0.000000
741	0.000000	741	6.108306
742	3.399305	742	0.000000
743	3.399305	743	0.000000
744	0.000000	744	7.758138
745	130.404388	745	0.000000
746	130.404388	746	0.000000
747	428.137187	747	0.000000

Continua na próxima página

Coordenada x	Valor x	Coordenada z	Valor z
748	272.601639	748	0.000000
749	14.823510	749	0.000000
750	66.381677	750	0.000000
751	200.610511	751	0.000000
752	444.569433	752	0.000000
753	1427.123958	753	0.000000
754	-0.000000	754	0.000000
755	-0.000000	755	0.000000
756	-0.000000	756	0.000000
757	0.000000	757	0.068421
758	0.000000	758	19.565252
759	0.000000	759	10.270000
760	0.000000	760	4.540000
761	0.000000	761	4.540000
762	0.000000	762	4.602891
763	0.000000	763	5.182377
764	0.000000	764	5.296171
765	0.000000	765	10.798264
766	0.000000	766	0.000000
767	0.000000	767	5.302460
768	0.000000	768	4.540000
769	0.000000	769	5.312483
770	0.000000	770	0.000000
771	0.000000	771	5.426277
772	0.000000	772	5.200753
773	0.000000	773	5.035172
774	0.000000	774	6.240000
775	0.000000	775	5.120370
776	0.000000	776	5.307472
777	0.000000	777	4.540000
778	0.000000	778	5.400000
779	0.000000	779	4.579307
780	0.000000	780	7.184758
781	0.000000	781	4.540000
782	0.000000	782	6.192810
783	0.000000	783	0.000000
784	0.000000	784	4.540000
785	0.000000	785	4.540000
786	0.000000	786	4.602891
787	0.000000	787	4.540000
788	0.000000	788	4.540000
789	0.000000	789	5.274945
790	0.000000	790	5.400000
791	0.000000	791	5.307472
792	0.000000	792	4.579307
793	0.000000	793	4.540000
794	0.000000	794	4.540000
795	0.000000	795	5.273333
796	0.000000	796	4.540000

Continua na próxima página

Coordenada x	Valor x	Coordenada z	Valor z
797	0.000000	797	5.200753
798	0.000000	798	4.540000
799	0.000000	799	4.540000
800	0.000000	800	0.000000
801	0.000000	801	4.540000
802	0.000000	802	4.540000
803	0.000000	803	4.602891
804	0.000000	804	4.540000
805	0.000000	805	4.540000
806	0.000000	806	5.274945
807	0.000000	807	5.400000
808	0.000000	808	5.307472
809	0.000000	809	4.579307
810	0.000000	810	4.540000
811	0.000000	811	4.540000
812	0.000000	812	5.273333
813	0.000000	813	4.540000
814	0.000000	814	5.200753
815	0.000000	815	4.540000
816	0.000000	816	4.540000
817	0.000000	817	0.000000
818	0.000000	818	1.533180
819	0.000000	819	1.493873
820	0.000000	820	1.493873
821	-0.000000	821	0.000000
822	0.000000	822	4.432456
823	0.000000	823	4.539205
824	0.000000	824	4.766641
825	0.000000	825	3.055941
826	0.000000	826	3.048976
827	0.000000	827	9.223802
828	0.000000	828	0.163749
829	0.000000	829	3.055265
830	0.000000	830	4.540000
831	0.000000	831	2.719611
832	0.000000	832	0.163749
833	0.000000	833	7.358576
834	0.000000	834	4.892144
835	0.000000	835	8.523521
836	0.000000	836	1.771155
837	0.000000	837	3.742495
838	0.000000	838	1.856353
839	0.000000	839	7.239770
840	0.000000	840	4.392363
841	0.000000	841	8.722768
842	0.000000	842	4.431670
843	0.000000	843	4.392363
844	0.000000	844	8.125108
845	-0.000000	845	0.000000

Continua na próxima página

Coordenada x	Valor x	Coordenada z	Valor z
846	0.000000	846	4.216141
847	0.000000	847	8.194427
848	-0.000000	848	0.000000
849	0.000000	849	4.579307
850	0.000000	850	5.740000
851	0.000000	851	4.540000
852	0.000000	852	5.307472
853	0.000000	853	4.540000
854	-0.000000	854	0.000000
855	0.000000	855	0.039307
856	345.370526	856	0.000000
857	371.227321	857	0.000000
858	0.000000	858	0.733333
859	0.000000	859	0.767472
860	0.000000	860	0.860000
861	0.000000	861	0.996632
862	0.000000	862	0.660753
863	31.476960	863	0.000000
864	0.000000	864	0.886277
865	0.000000	865	0.876844
866	0.000000	866	1.652810
867	748.074807	867	0.000000
868	0.000000	868	2.259492
869	0.000000	869	0.523329
870	-0.000000	870	0.000000
871	0.000000	871	0.511315
872	0.000000	872	2.004432
873	0.000000	873	3.888967
874	0.000000	874	1.408952
875	0.000000	875	4.038606
876	0.000000	876	2.172609
877	0.000000	877	4.343422
878	0.000000	878	1.416032
879	0.000000	879	3.999863
880	-0.000000	880	0.000000
881	45.818703	881	0.000000
882	4.894118	882	0.000000
883	6.348578	883	0.000000
884	57.061399	884	0.000000
885	0.000000	885	0.390298
886	0.000000	886	0.035148
887	0.000000	887	15.914386
888	200.000000	888	0.000000
889	0.000000	889	0.293333
890	25.201260	890	0.000000
891	21.176471	891	0.000000
892	281.130967	892	0.000000
893	0.000000	893	0.068421
894	47.824090	894	0.000000

Continua na próxima página

Coordenada x	Valor x	Coordenada z	Valor z
895	0.000000	895	0.269214
896	217.352278	896	0.000000
897	0.000000	897	0.078990
898	0.000000	898	1.839573
899	-0.000000	899	0.000000
900	0.000000	900	1.888309
901	0.000000	901	1.882651
902	0.000000	902	10.381462
903	0.000000	903	10.918831
904	97.524176	904	0.000000
905	0.000000	905	11.770066
906	-0.000000	906	0.000000
907	-0.000000	907	0.000000
908	0.000000	908	16.735979
909	0.000000	909	16.662265
910	0.000000	910	7.045799
911	0.000000	911	7.569941
912	0.000000	912	6.733740
913	0.000000	913	6.389160
914	0.000000	914	6.435799
915	0.000000	915	3.023951
916	0.000000	916	3.503229
917	0.000000	917	3.663725
918	0.000000	918	2.780993
919	0.000000	919	2.861242
920	0.000000	920	3.347676
921	0.000000	921	2.561242
922	0.000000	922	2.307480
923	0.000000	923	0.464338
924	11.930274	924	0.000000
925	0.000000	925	0.420000
926	-0.000000	926	0.000000
927	0.000000	927	8.890000
928	3.025227	928	0.000000
929	0.000000	929	7.480000
930	10.877052	930	0.000000
931	0.000000	931	27.357000
932	0.000000	932	11.100000
933	281.130967	933	0.000000
934	0.000000	934	4.154000
935	0.000000	935	0.370000
936	38.252187	936	0.000000
937	0.000000	937	2.364000
938	0.000000	938	0.130000
939	0.000000	939	0.446953
940	0.000000	940	7.146953
941	0.000000	941	1.636953
942	0.616845	942	0.000000
943	0.000000	943	5.000000

Continua na próxima página

Coordenada x	Valor x	Coordenada z	Valor z
944	0.000000	944	1.050000
945	0.000000	945	1.121996
946	0.000000	946	0.691996
947	0.000000	947	36.717508
948	0.000000	948	6.900000
949	-0.000000	949	0.000000
950	0.000000	950	4.280000
951	0.000000	951	19.588821
952	8.728888	952	0.000000
953	0.000000	953	3.170000
954	0.000000	954	36.885794
955	371.503922	955	0.000000
956	0.000000	956	0.340000
957	0.000000	957	12.272227
958	480.000000	958	0.000000
959	-0.000000	959	0.000000
960	143.217641	960	0.000000
961	-0.000000	961	0.000000
962	-0.000000	962	0.000000
963	0.000000	963	21.045000
964	3.559091	964	0.000000
965	0.000000	965	1.810000
966	-0.000000	966	0.000000
967	-0.000000	967	0.000000
968	0.000000	968	3.260000
969	47.824090	969	0.000000
970	783.002959	970	0.000000
971	0.000000	971	6.220000
972	-0.000000	972	0.000000
973	469.188384	973	0.000000
974	0.000000	974	21.705000
975	-0.000000	975	0.000000
976	0.000000	976	7.320623
977	0.000000	977	7.570382
978	1153.461719	978	0.000000
979	1087.407019	979	0.000000
980	973.306497	980	0.000000
981	0.000000	981	2.850000
982	-0.000000	982	0.000000
983	21.831215	983	0.000000
984	0.000000	984	5.892424
985	-0.000000	985	0.000000
986	0.000000	986	0.000000
987	-0.000000	987	0.000000
988	-0.000000	988	0.000000
989	0.000000	989	3.410000
990	588.130548	990	0.000000
991	1913.630689	991	0.000000
992	0.000000	992	2.650000

Continua na próxima página

Coordenada x	Valor x	Coordenada z	Valor z
993	-0.000000	993	0.000000
994	-0.000000	994	0.000000
995	-0.000000	995	0.000000
996	-0.000000	996	0.000000
997	0.000000	997	1.811280
998	-0.000000	998	0.000000
999	192.000000	999	0.000000
1000	0.000000	1000	1.336585
1001	-0.000000	1001	0.000000
1002	-0.000000	1002	0.000000
1003	-0.000000	1003	0.000000
1004	0.000000	1004	0.590000
1005	0.000000	1005	7.645977
1006	-0.000000	1006	0.000000
1007	97.524176	1007	0.000000
1008	61.695405	1008	0.000000
1009	0.000000	1009	8.005000
1010	0.000000	1010	8.005000
1011	0.000000	1011	10.775541
1012	0.000000	1012	5.996966
1013	-0.000000	1013	0.000000
1014	-0.000000	1014	0.000000
1015	-0.000000	1015	0.000000
1016	-0.000000	1016	0.000000
1017	-0.000000	1017	0.000000
1018	-0.000000	1018	0.000000
1019	-0.000000	1019	0.000000
1020	0.000000	1020	6.865977
1021	-0.000000	1021	0.000000
1022	1.025076	1022	0.000000
1023	0.000000	1023	4.064967
1024	-0.000000	1024	0.000000
1025	-0.000000	1025	0.000000
1026	0.000000	1026	0.746966
1027	19.755342	1027	0.000000
1028	0.000000	1028	3.764967
1029	-0.000000	1029	0.000000
1030	-0.000000	1030	0.000000
1031	-0.000000	1031	0.000000
1032	0.000000	1032	17.566413
1033	0.000000	1033	6.000000
1034	0.000000	1034	5.800000
1035	26.050332	1035	0.000000
1036	0.000000	1036	4.860000
1037	-0.000000	1037	0.000000
1038	8.220902	1038	0.000000
1039	15.898742	1039	0.000000
1040	24.341389	1040	0.000000
1041	3.399305	1041	0.000000

Continua na próxima página

Coordenada x	Valor x	Coordenada z	Valor z
1042	-0.000000	1042	0.000000
1043	-0.000000	1043	0.000000
1044	72.437007	1044	0.000000
1045	0.000000	1045	7.529656
1046	0.000000	1046	9.150551
1047	0.000000	1047	7.233922
1048	0.000000	1048	39.351453
1049	0.000000	1049	35.351453
1050	0.000000	1050	20.084287
1051	0.000000	1051	23.972227
1052	0.000000	1052	27.962842
1053	0.000000	1053	10.270000
1054	0.000000	1054	14.532514
1055	0.000000	1055	10.338421
1056	0.000000	1056	29.644382
1057	0.000000	1057	5.307472
1058	0.000000	1058	4.540000
1059	0.000000	1059	4.540000
1060	0.000000	1060	11.113106
1061	0.000000	1061	12.475793
1062	0.000000	1062	10.020000
1063	0.000000	1063	9.942424
1064	0.000000	1064	9.822424
1065	0.000000	1065	9.900000
1066	0.000000	1066	5.130000
1067	0.000000	1067	4.540000
1068	0.000000	1068	4.080000
1069	-0.000000	1069	0.000000
1070	-0.000000	1070	0.000000
1071	0.000000	1071	0.000000
1072	17.200000	1072	0.000000
1073	107.371612	1073	0.000000
1074	0.000000	1074	0.000000
1075	106.700926	1075	0.000000
1076	21.176471	1076	0.000000
1077	62.063513	1077	0.000000
1078	0.000000	1078	16.908172
1079	-0.000000	1079	0.000000
1080	0.000000	1080	15.229297
1081	-0.000000	1081	0.000000
1082	-0.000000	1082	0.000000
1083	-0.000000	1083	0.000000
1084	1.393989	1084	0.000000
1085	217.352278	1085	0.000000
1086	1422.185803	1086	0.000000
1087	0.000000	1087	33.253299
1088	-0.000000	1088	0.000000
1089	22.760892	1089	0.000000
1090	80.254193	1090	0.000000

Continua na próxima página

Coordenada x	Valor x	Coordenada z	Valor z
1091	0.000000	1091	84.808980
1092	79.139921	1092	0.000000
1093	364.000000	1093	0.586972
1094	-0.000000	1094	0.000000
1095	120.521309	1095	0.000000
1096	0.000000	1096	25.356586
1097	0.089051	1097	0.000000
1098	0.208299	1098	0.000000
1099	11.464885	1099	0.000000
1100	1.997604	1100	0.000000
1101	1288.547380	1101	0.000000
1102	133.638423	1102	0.000000
1103	0.000000	1103	0.759226
1104	0.000000	1104	4.635281
1105	91.719078	1105	0.000000
1106	0.000000	1106	1.015661
1107	-0.000000	1107	0.000000
1108	0.000000	1108	89.587166
1109	0.000000	1109	88.418538
1110	0.000000	1110	2.264863
1111	-0.000000	1111	0.000000
1112	-0.000000	1112	0.000000
1113	190.715413	1113	0.000000
1114	-0.000000	1114	0.000000
1115	-0.000000	1115	0.000000
1116	-0.000000	1116	0.000000
1117	213.327870	1117	0.000000
1118	-0.000000	1118	0.000000
1119	2.592363	1119	0.000000
1120	98.152725	1120	0.000000
1121	717.031623	1121	0.000000
1122	25713.381196	1122	0.000000
1123	0.000000	1123	1.225003
1124	0.000000	1124	0.569749
1125	16.054874	1125	0.000000
1126	0.000000	1126	1.311665
1127	-0.000000	1127	0.000000
1128	0.000000	1128	1.053771
1129	0.000000	1129	2.117421
1130	-0.000000	1130	0.000000
1131	22.756116	1131	0.000000
1132	0.000000	1132	9.276963
1133	0.000000	1133	0.124064
1134	0.000000	1134	10.240747
1135	75.375848	1135	0.000000
1136	74.034733	1136	0.000000
1137	0.089051	1137	0.000000
1138	0.185456	1138	0.000000
1139	0.000000	1139	9.425112

Continua na próxima página

Coordenada x	Valor x	Coordenada z	Valor z
1140	0.000000	1140	11.564299
1141	73.106950	1141	0.000000
1142	20913.742048	1142	0.000000
1143	270.526819	1143	0.000000
1144	188.496078	1144	0.000000
1145	0.000000	1145	1.897177
1146	0.000000	1146	0.490650
1147	0.000000	1147	1.100000
1148	-0.000000	1148	0.000000
1149	0.000000	1149	3.453833
1150	0.000000	1150	0.227994
1151	-0.000000	1151	0.000000
1152	0.000000	1152	0.245844
1153	0.000000	1153	0.150734
1154	0.000000	1154	0.485347
1155	-0.000000	1155	0.000000
1156	0.000000	1156	11.303259
1157	0.000000	1157	1.746151
1158	0.000000	1158	12.355559
1159	0.000000	1159	2.088223
1160	0.000000	1160	1.150023
1161	0.000000	1161	56.041661
1162	-0.000000	1162	0.000000
1163	0.000000	1163	7.806777
1164	0.000000	1164	10.151154
1165	-0.000000	1165	0.000000
1166	-0.000000	1166	0.000000
1167	-0.000000	1167	0.000000
1168	-0.000000	1168	0.000000
1169	0.000000	1169	1.567230
1170	1.393989	1170	0.000000
1171	-0.000000	1171	0.000000
1172	6.706018	1172	0.000000
1173	0.000000	1173	0.968008
1174	0.000000	1174	0.687819
1175	-0.000000	1175	0.000000
1176	0.000000	1176	0.148585
1177	-0.000000	1177	0.000000
1178	3.554322	1178	0.000000
1179	-0.000000	1179	0.000000
1180	0.000000	1180	0.788112
1181	5.105188	1181	0.000000
1182	-0.000000	1182	0.000000
1183	0.022843	1183	0.000000
1184	0.000000	1184	4.791197
1185	0.000000	1185	5.888984
1186	9.004564	1186	0.000000
1187	1207.531018	1187	0.000000
1188	22.511410	1188	0.000000

Continua na próxima página

Coordenada x	Valor x	Coordenada z	Valor z
1189	16.782359	1189	0.000000
1190	117.330329	1190	0.000000
1191	86.324326	1191	0.000000
1192	0.000000	1192	0.560000
1193	120.521309	1193	0.000000
1194	102.397378	1194	0.000000
1195	0.000000	1195	0.693333
1196	426.573341	1196	0.000000
1197	-0.000000	1197	0.000000
1198	0.000000	1198	7.605551
1199	0.000000	1199	0.102498
1200	0.000000	1200	11.838231
1201	0.000000	1201	0.286429
1202	0.000000	1202	9.461490
1203	0.000000	1203	0.451343
1204	0.000000	1204	122.767861
1205	0.000000	1205	15.860430
1206	0.000000	1206	0.367179
1207	0.000000	1207	127.026829
1208	0.000000	1208	16.320167
1209	0.000000	1209	26.609252
1210	0.000000	1210	27.360119
1211	0.000000	1211	0.571391
1212	-0.000000	1212	0.000000
1213	-0.000000	1213	0.000000
1214	0.000000	1214	0.267275
1215	0.000000	1215	4.269162
1216	0.000000	1216	0.062692
1217	0.000000	1217	10.245673
1218	0.000000	1218	0.916175
1219	0.000000	1219	7.373741
1220	28.593683	1220	0.000000
1221	0.000000	1221	121.363511
1222	0.000000	1222	15.015307
1223	184.803236	1223	0.000000
1224	0.000000	1224	124.394831
1225	0.000000	1225	13.735876
1226	0.000000	1226	25.118998
1227	0.000000	1227	24.233001
1228	207.141362	1228	0.000000
1229	498.532987	1229	0.000000
1230	420.538281	1230	0.000000
1231	142.218580	1231	0.000000
1232	0.000000	1232	6.893934
1233	173.284587	1233	0.000000
1234	0.000000	1234	11.137794
1235	0.000000	1235	0.256572
1236	0.000000	1236	8.682353
1237	17.963724	1237	0.000000

Continua na próxima página

Coordenada x	Valor x	Coordenada z	Valor z
1238	0.000000	1238	0.752502
1239	0.000000	1239	122.197343
1240	0.000000	1240	15.299468
1241	0.000000	1241	0.264681
1242	0.000000	1242	126.456311
1243	0.000000	1243	15.759205
1244	0.000000	1244	25.908816
1245	0.000000	1245	26.659682
1246	0.000000	1246	0.541535
1247	0.000000	1247	0.586972
1248	0.000000	1248	0.870431
1249	404.463918	1249	0.000000
1250	333.466891	1250	0.000000
1251	-0.000000	1251	0.000000
1252	0.000000	1252	3.382607
1253	0.000000	1253	0.195968
1254	0.000000	1254	13.213113
1255	0.000000	1255	1.493745
1256	0.000000	1256	8.048390
1257	-0.000000	1257	0.000000
1258	-0.000000	1258	0.000000
1259	0.000000	1259	119.176997
1260	0.000000	1260	13.308700
1261	-0.000000	1261	0.000000
1262	0.000000	1262	120.421808
1263	0.000000	1263	9.705878
1264	0.000000	1264	22.509997
1265	0.000000	1265	19.067254
1266	0.000000	1266	0.206105
1267	0.000000	1267	0.782940
1268	0.000000	1268	0.605751
1269	-0.000000	1269	0.000000
1270	-0.000000	1270	0.000000
1271	-0.000000	1271	0.000000
1272	0.000000	1272	17.189125
1273	0.000000	1273	0.000000
1274	0.000000	1274	31.993435
1275	0.000000	1275	6.942052
1276	0.000000	1276	13.796192
1277	-0.000000	1277	0.000000
1278	-0.000000	1278	0.000000
1279	0.000000	1279	116.068135
1280	0.000000	1280	14.274505
1281	-0.000000	1281	0.000000
1282	-0.000000	1282	0.000000
1283	-0.000000	1283	0.000000
1284	0.000000	1284	14.458673
1285	-0.000000	1285	0.000000
1286	0.000000	1286	1.523437

Continua na próxima página

Coordenada x	Valor x	Coordenada z	Valor z
1287	-0.000000	1287	0.000000
1288	0.000000	1288	0.018778
1289	-0.000000	1289	0.000000
1290	-0.000000	1290	0.000000
1291	0.000000	1291	0.000000
1292	0.000000	1292	0.000000
1293	0.000000	1293	9.826862
1294	0.000000	1294	0.000000
1295	0.000000	1295	4.540000
1296	0.000000	1296	0.480000
1297	0.000000	1297	0.000000
1298	0.000000	1298	0.000000
1299	0.000000	1299	9.239890
1300	0.000000	1300	0.000000
1301	0.000000	1301	4.540000
1302	0.000000	1302	0.000000
1303	0.000000	1303	4.501688
1304	-0.000000	1304	0.000000
1305	7.822022	1305	0.000000
1306	0.000000	1306	14.990509
1307	155.729345	1307	0.000000
1308	3.445674	1308	0.000000
1309	0.000000	1309	2.443765
1310	0.000000	1310	14.454225
1311	31.182299	1311	0.000000
1312	59.709119	1312	0.000000
1313	1.944272	1313	0.000000
1314	0.000000	1314	0.475000
1315	0.000000	1315	33.394608
1316	188.496078	1316	0.000000
1317	-0.000000	1317	0.000000
1318	16.782359	1318	0.000000
1319	166.997041	1319	0.000000
1320	0.000000	1320	7.655000
1321	420.538281	1321	0.000000
1322	-0.000000	1322	0.000000
1323	-0.000000	1323	0.000000
1324	0.000000	1324	0.000000
1325	333.466891	1325	0.000000
1326	-0.000000	1326	0.000000
1327	-0.000000	1327	0.000000
1328	-0.000000	1328	0.000000
1329	407.096231	1329	0.000000
1330	0.000000	1330	2.650000
1331	335.022319	1331	0.000000
1332	-0.000000	1332	0.000000
1333	30.817610	1333	0.000000
1334	31.182299	1334	0.000000
1335	0.000000	1335	0.150000

Continua na próxima página

Coordenada x	Valor x	Coordenada z	Valor z
1336	0.000000	1336	7.529656
1337	0.000000	1337	20.084287
1338	0.000000	1338	10.020000
1339	0.000000	1339	9.942424
1340	0.000000	1340	9.822424
1341	0.000000	1341	9.900000
1342	0.000000	1342	4.540000
1343	0.000000	1343	5.100000
1344	0.000000	1344	11.030000
1345	-0.000000	1345	0.000000
1346	-0.000000	1346	0.000000
1347	9.309064	1347	0.000000
1348	19.477111	1348	0.000000
1349	6.278371	1349	0.000000
1350	63.000000	1350	-2.099325
1351	127.000000	1351	-0.442857
1352	-0.000000	1352	0.000000
1353	-0.000000	1353	0.000000
1354	-0.000000	1354	0.000000
1355	-0.000000	1355	0.000000
1356	-0.000000	1356	0.000000
1357	-0.000000	1357	0.000000
1358	63.000000	1358	0.000000
1359	0.000000	1359	0.022953
1360	110.701620	1360	0.000000
1361	254.000000	1361	0.000000
1362	0.000000	1362	0.044459
1363	10.832957	1363	0.000000
1364	229.441624	1364	0.000000
1365	-0.000000	1365	0.000000
1366	-0.000000	1366	0.000000
1367	-0.000000	1367	0.000000
1368	-0.000000	1368	0.000000
1369	-0.000000	1369	0.000000
1370	-0.000000	1370	0.000000
1371	-0.000000	1371	0.000000
1372	-0.000000	1372	0.000000
1373	-0.000000	1373	0.000000
1374	-0.000000	1374	0.000000
1375	0.000000	1375	22.229838
1376	0.000000	1376	22.952741
1377	-0.000000	1377	0.000000
1378	-0.000000	1378	0.000000
1379	-0.000000	1379	0.000000
1380	-0.000000	1380	0.000000
1381	39.000000	1381	0.000000
1382	0.000000	1382	0.252857
1383	32.310000	1383	0.000000
1384	41.294702	1384	0.000000

Continua na próxima página

Coordenada x	Valor x	Coordenada z	Valor z
1385	0.000000	1385	0.842857
1386	226.000000	1386	0.000000
1387	0.000000	1387	3.887940
1388	-0.000000	1388	0.000000
1389	69.761766	1389	0.000000
1390	32.310000	1390	0.000000
1391	41.294702	1391	0.000000
1392	0.000000	1392	2.650000
1393	39.000000	1393	0.000000
1394	226.000000	1394	0.000000
1395	0.000000	1395	0.500305
1396	0.000000	1396	2.275305
1397	0.000000	1397	23.972227
1398	0.000000	1398	4.540000
1399	0.000000	1399	0.000000
1400	0.000000	1400	9.420000
1401	0.000000	1401	4.684714
1402	0.000000	1402	0.000000
1403	-0.000000	1403	0.000000
1404	13.017139	1404	0.000000
1405	8.141970	1405	0.000000
1406	0.000000	1406	-3.787000
1407	-0.000000	1407	0.000000
1408	0.000000	1408	-3.470000
1409	-0.000000	1409	0.000000
1410	-0.000000	1410	0.000000
1411	-0.000000	1411	0.000000
1412	7480.000000	1412	-2.279656
1413	0.000000	1413	-4.083922
1414	0.000000	1414	-41.936756
1415	138.000000	1415	-6.812851
1416	363.000000	1416	-5.977911
1417	122.000000	1417	-21.625788
1418	0.000000	1418	-7.000000
1419	310.000000	1419	0.000000
1420	310.000000	1420	-17.931416
1421	200.000000	1421	-0.440000
1422	0.000000	1422	-107.182701
1423	728.000000	1423	-2.426862
1424	0.000000	1424	-46.784562
1425	3.025227	1425	0.000000
1426	320.000000	1426	25.351453
1427	560.000000	1427	-4.545713
1428	480.000000	1428	-2.357773
1429	160.000000	1429	-0.367158
1430	469.188384	1430	0.000000
1431	51.383181	1431	0.000000
1432	950.000000	1432	3.600000
1433	1574.000000	1433	-1.447576

Continua na próxima página

Coordenada x	Valor x	Coordenada z	Valor z
1434	1179.000000	1434	-1.370000
1435	0.000000	1435	-11.270000
1436	0.000000	1436	-11.270000
1437	620.440548	1437	0.000000
1438	2362.021622	1438	0.000000
1439	3317.484488	1439	0.000000
1440	39.000000	1440	-1.847009
1441	226.000000	1441	-1.554695
1442	192.000000	1442	1.533170
1443	180.000000	1443	-12.305267

3 Variáveis Duais (Multiplicadores de Lagrange)

Tabela 2: Variáveis duais do problema maros

Coordenada y	Valor y
1	-7.529656
2	-9.150551
3	-7.129178
4	-7.233922
5	-0.000000
6	-4.540000
7	-4.540000
8	-47.846756
9	-12.522851
10	-11.287911
11	-30.875788
12	-30.158199
13	-13.185820
14	-21.801416
15	-9.826862
16	-0.000000
17	-4.540000
18	-62.464562
19	-10.460000
20	-76.500000
21	-121.600000
22	-123.000000
23	-15.000000
24	-15.000000
25	-39.351453
26	-44.287608
27	-8.810000
28	-9.800000
29	-7.990000
30	-10.270000

Continua na próxima página

Coordenada y	Valor y
31	-20.084287
32	-23.972227
33	-5.625000
34	-27.962842
35	-7.285000
36	-28.330000
37	-11.280000
38	-10.270000
39	-28.990000
40	-7.860000
41	-9.822424
42	-9.900000
43	-9.942424
44	-10.020000
45	-4.500000
46	-0.000000
47	-0.000000
48	-0.000000
49	-5.130000
50	-4.540000
51	-4.430000
52	-4.080000
53	-5.252991
54	-4.760000
55	-2.785305
56	-4.596585
57	-2.785305
58	3.855267
59	3.615267
60	4.195267
61	4.815267
62	-14.544733
63	-6.194733
64	-10.170274
65	-5.391699
66	0.605267
67	0.605267
68	0.605267
69	-0.194733
70	0.465267
71	0.145267
72	-0.004733
73	-3.524733
74	-3.734733
75	-3.734733
76	-4.034733
77	-4.034733
78	-4.034733
79	-5.740000
Continua na próxima página	

Coordenada y	Valor y
80	-8.020000
81	-4.540000
82	-0.000000
83	-0.000000
84	-0.000000
85	-10.883659
86	-4.540000
87	-11.501435
88	-19.852887
89	-10.270000
90	-16.970000
91	-42.357508
92	-5.259862
93	-11.596649
94	-14.532514
95	-17.810599
96	-10.338421
97	-10.338421
98	-10.338421
99	-10.338421
100	-10.338421
101	-10.569162
102	-10.270000
103	-0.000000
104	-22.963821
105	-27.105871
106	-31.834330
107	-8.725769
108	-19.347733
109	-10.270000
110	-10.340296
111	-10.270000
112	-10.270000
113	-10.270000
114	-10.270000
115	-20.226951
116	-29.758349
117	-10.270000
118	-29.835252
119	-29.418627
120	-22.560475
121	-15.233434
122	-19.347733
123	-10.270000
124	-43.700794
125	-35.354536
126	-52.237242
127	-46.955302
128	-14.608127

Continua na próxima página

Coordenada y	Valor y
129	-29.644382
130	-31.031765
131	-31.244316
132	-45.672735
133	-13.741365
134	-10.150162
135	-10.998348
136	-36.773853
137	-39.351453
138	-35.351453
139	-81.691600
140	-37.798406
141	-38.851453
142	-44.000000
143	-34.973449
144	-12.448857
145	-10.270000
146	-11.250000
147	-10.270000
148	-12.598875
149	-14.150382
150	-12.772468
151	-14.370623
152	-11.113106
153	-12.475793
154	-4.540000
155	-8.483785
156	-10.929774
157	-0.000000
158	-11.192467
159	-9.173703
160	-5.856034
161	-11.922611
162	-11.199263
163	-11.354766
164	-10.778281
165	-10.929421
166	-4.433667
167	-4.540000
168	-5.182377
169	-4.540000
170	-5.296171
171	-4.602891
172	-10.798264
173	-4.579307
174	-4.540000
175	-4.540000
176	-5.426277
177	-6.192810
Continua na próxima página	

Coordenada y	Valor y
178	-0.000000
179	-4.540000
180	-5.302460
181	-12.510977
182	-4.256274
183	-6.187419
184	-4.452013
185	-4.463557
186	-6.085165
187	-7.058510
188	-6.453235
189	-14.924161
190	-6.082744
191	-8.678155
192	-6.953564
193	-3.956523
194	-2.846641
195	-5.634258
196	-5.537025
197	-5.350710
198	-7.698901
199	-5.305347
200	-6.103563
201	-19.528938
202	-6.592213
203	-10.055251
204	-8.410877
205	-4.034733
206	-0.000000
207	-0.000000
208	-0.000000
209	-7.799700
210	-5.391699
211	-6.194733
212	-19.701146
213	-6.686332
214	-10.170274
215	-8.524733
216	-20.160000
217	-12.160000
218	-17.100000
219	-22.719180
220	-23.660000
221	-11.848306
222	-14.362267
223	-15.066220
224	-14.538255
225	-5.400000
226	-4.540000
Continua na próxima página	

Coordenada y	Valor y
227	-5.200753
228	-5.740000
229	-11.848306
230	-5.312483
231	-5.740000
232	-5.035172
233	-11.848306
234	-11.848306
235	-3.046127
236	-4.540000
237	-0.000000
238	-0.000000
239	-0.000000
240	-6.240000
241	-5.120370
242	-0.000000
243	-4.540000
244	-0.000000
245	-7.184758
246	-4.540000
247	-4.540000
248	-4.540000
249	-2.316270
250	-0.000000
251	-5.307472
252	-0.000000
253	-5.416844
254	-4.540000
255	-4.540000
256	-4.444849
257	-4.540000
258	-4.540000
259	-4.540000
260	-5.273333
261	-5.536632
262	-4.653170
263	-4.653170
264	-5.274945
265	-7.000000
266	-0.000000
267	-4.540000
268	-24.533077
269	-20.671245
270	-24.228538
271	-33.786631
272	-28.767206
273	-35.410000
274	-55.752748
275	-10.270000

Continua na próxima página

Coordenada y	Valor y
276	-60.116015
277	-9.887356
278	-11.125058
279	-28.061946
280	-37.285192
281	-28.687500
282	-0.000000
283	-0.000000
284	-6.455142
285	-4.540000
286	-4.430000
287	-4.080000
288	3.855267
289	3.615267
290	4.195267
291	-6.194733
292	-0.194733
293	-5.740000
294	-10.338421
295	-10.270000
296	-19.347733
297	-11.848306
298	-3.046127
299	-0.000000
300	-0.000000
301	-0.000000
302	-0.000000
303	-0.000000
304	-4.540000
305	-7.267656
306	0.000000
307	0.158585
308	38.190935
309	0.084302
310	-0.439408
311	-0.001117
312	-0.000000
313	-0.000000
314	-0.256034
315	-0.279510
316	-0.259586
317	-0.000000
318	-0.000000
319	0.000134
320	-0.000000
321	-0.000000
322	0.048913
323	-0.000000
324	-0.000000

Continúa na próxima página

Coordenada y	Valor y
325	-2.489984
326	-1.146804
327	0.423641
328	-0.000000
329	-0.000000
330	-0.004926
331	-0.000000
332	-0.000000
333	-0.000000
334	0.096966
335	-0.000000
336	-0.000000
337	-0.000000
338	-0.000000
339	0.062250
340	-0.000000
341	-0.000000
342	37.500000
343	34.954341
344	-0.000000
345	0.123622
346	-0.386390
347	-0.001517
348	0.001486
349	-0.000000
350	-0.250562
351	-0.380215
352	-0.000000
353	-0.000000
354	-0.247010
355	-0.000000
356	-0.000000
357	-0.000000
358	0.021359
359	-0.000000
360	-0.000000
361	97.983398
362	-0.000000
363	-0.000000
364	-0.000000
365	0.034742
366	-0.000000
367	-0.000000
368	-1.114270
369	-0.000000
370	-0.000000
371	-0.000145
372	-0.000000
373	-0.000000

Continúa na próxima página

Coordenada y	Valor y
374	-0.000000
375	-0.222763
376	-0.226315
377	-19.276970
378	-0.000000
379	-0.000000
380	0.366310
381	37.500000
382	40.610164
383	-0.000000
384	0.035163
385	-0.000000
386	-0.000000
387	-0.000000
388	0.023057
389	-0.448999
390	-0.000000
391	-0.000426
392	-0.000000
393	-0.000000
394	-0.000000
395	0.096335
396	-0.000000
397	-0.000000
398	-0.000000
399	40.500000
400	35.271160
401	-0.016408
402	0.150689
403	-0.352059
404	-0.000000
405	-0.001656
406	-0.000000
407	-0.000000
408	-0.235497
409	-0.239048
410	-0.000000
411	-0.000000
412	-0.415208
413	-0.000000
414	-0.000000
415	0.066580
416	-0.000000
417	0.054049
418	-15.956149
419	-0.000000
420	1.700651
421	-0.000000
422	-0.000000

Continua na próxima página

Coordenada y	Valor y
423	-0.000000
424	0.417774
425	-0.000000
426	-0.018896
427	-0.000000
428	-0.005757
429	-0.000000
430	-0.000000
431	-0.000000
432	-0.218645
433	-0.222197
434	-11.663462
435	-0.000000
436	-0.000000
437	-0.000000
438	37.500000
439	-0.000000
440	-0.000000
441	-0.000000
442	-0.000000
443	0.510993
444	-0.000000
445	0.020636
446	-0.000000
447	-0.000000
448	-0.000000
449	-0.000000
450	-4.194093
451	-0.000000
452	-0.000000
453	-0.000000
454	28.076923
455	-0.000000
456	-0.000000
457	-0.000000
458	-0.000000
459	13.187011
460	-0.000000
461	-0.000000
462	-0.138811
463	-0.000000
464	0.144294
465	-0.000000
466	12.552167
467	-0.132128
468	-0.000000
469	-0.000000
470	-0.000000
471	-0.000000
Continua na próxima página	

Coordenada y	Valor y
472	6.956670
473	-0.000000
474	11.324926
475	-0.119210
476	-0.000000
477	-0.000000
478	-0.000000
479	-0.000000
480	-0.000000
481	-0.000000
482	-0.000000
483	-0.000000
484	9.083115
485	-0.095612
486	-0.000000
487	22.500000
488	-0.011119
489	0.067437
490	-0.000000
491	-0.000000
492	0.144294
493	22.500000
494	-0.000000
495	-0.000000
496	-0.000000
497	-0.000000
498	-0.000000
499	-0.000000
500	0.134252
501	101.891393
502	-0.000000
503	22.500000
504	-0.000000
505	-0.000000
506	-0.000000
507	-0.000000
508	-0.000000
509	-0.000000
510	-0.000000
511	-0.000000
512	-0.000000
513	-0.000000
514	-0.000000
515	-0.000000
516	-0.000000
517	-0.000000
518	-0.000000
519	-0.000000
520	-0.294258

Continúa na próxima página

Coordenada y	Valor y
521	-1.297281
522	-2.002993
523	-0.000000
524	-0.000000
525	-0.000000
526	-0.581077
527	-0.000000
528	-0.000000
529	-16.793835
530	-65.752540
531	-65.556002
532	-4.460094
533	-22.278414
534	-0.000000
535	-0.000000
536	-0.040626
537	-1.834481
538	-0.000000
539	-0.504632
540	-0.264903
541	-23.806201
542	-13.522055
543	-0.000000
544	-0.000000
545	-0.000000
546	-0.000000
547	-0.000000
548	-0.464080
549	-0.118704
550	-1.159040
551	-0.000000
552	-0.000000
553	-0.000000
554	-0.000000
555	-0.000000
556	-0.000000
557	-1.829931
558	-30.932060
559	-94.245481
560	-0.000000
561	-4.394088
562	-0.000000
563	-0.000000
564	-0.000000
565	-0.000000
566	-0.000000
567	-0.000000
568	-0.000000
569	-0.480200
Continua na próxima página	

Coordenada y	Valor y
570	-0.000580
571	-0.001390
572	-4.540000
573	-7.529656
574	-14.593456
575	-12.522851
576	-8.100000
577	-30.193722
578	-33.035788
579	-21.801416
580	-9.239890
581	-9.826862
582	-0.000000
583	-4.540000
584	-37.107976
585	-5.940000
586	-121.600000
587	-123.000000
588	-8.000000
589	-43.987608
590	-29.518627
591	-26.992622
592	-20.084287
593	-23.972227
594	-27.962842
595	-30.643438
596	-29.844382
597	-11.030000
598	-9.942424
599	-10.020000
600	-9.822424
601	-9.900000
602	-4.500000
603	0.480000
604	-0.000000
605	-0.000000
606	-4.540000
607	-4.710000
608	-0.000000
609	-13.500000
610	-4.540000
611	-4.497960
612	-11.030000
613	-13.473765
614	-11.030000
615	-11.030000
616	-26.020509
617	-25.484225
618	-11.954779

Continua na próxima página

Coordenada y	Valor y
619	-11.420543
620	-0.000000
621	-0.000000
622	-0.000000
623	-11.705505
624	-9.504570
625	-10.110321
626	-19.311022
627	-119.040726
628	-12.395976
629	-123.299693
630	-12.855713
631	-11.056179
632	-20.061888
633	-4.540000
634	-4.540000
635	-4.501688
636	-0.000000
637	-4.540000
638	-4.540000
639	-4.775305
640	-5.100000
641	-5.233333
642	-7.000000
643	-20.084287
644	-23.972227
645	-27.962842
646	-4.540000
647	-10.147032
648	-16.097276
649	-9.822424
650	-9.900000
651	-58.944534
652	-0.000000
653	-0.000000
654	47.810755
655	0.000426
656	-0.562944
657	-0.000006
658	-0.000000
659	-0.000000
660	-0.000000
661	-0.257523
662	-0.261075
663	-0.000000
664	-0.000000
665	0.002583
666	-0.000000
667	-0.000000

Continua na próxima página

Coordenada y	Valor y
668	-0.000000
669	-0.000000
670	-0.000000
671	53.717138
672	-0.000000
673	0.018881
674	-0.586094
675	-0.000000
676	-0.000232
677	0.001875
678	-0.000000
679	-0.000000
680	-0.000000
681	-0.000000
682	-0.000000
683	-0.251212
684	-0.000000
685	-0.000000
686	-0.000000
687	-0.105495
688	-0.000000
689	44.282148
690	-0.000000
691	0.073179
692	-0.463201
693	-0.000000
694	-0.000813
695	0.001672
696	-0.000000
697	-0.000000
698	-0.000000
699	-0.000000
700	-0.000000
701	-0.241089
702	-0.000000
703	-0.000000
704	-0.203155
705	-0.237537
706	-0.000000
707	-0.000000
708	-0.000000
709	-0.000000
710	-0.000000
711	-0.000000
712	32.620581
713	-0.343375
714	-0.000000
715	-0.000000
716	-0.000000

Continúa na próxima página

Coordenada y	Valor y
717	-0.000000
718	1.023040
719	26.696090
720	-0.281011
721	-0.000000
722	-0.000000
723	-0.000000
724	-0.000000
725	-0.000000
726	-0.000000
727	31.433824
728	-0.330882
729	-0.000000
730	-0.000000
731	0.075615
732	-0.000000
733	0.249402
734	2.621006
735	19.369601
736	-0.203891
737	-0.000000
738	-0.575917
739	-0.000000
740	-0.000000
741	-0.000000
742	1.215503
743	-0.660057
744	2.122006
745	9.505962
746	0.702961
747	-0.000000
748	-0.000000
749	-0.000000
750	-0.000000
751	-0.000000
752	-0.000000
753	-0.000000
754	-0.000000
755	-0.000000
756	-2.669375
757	-0.000000
758	-71.604527
759	-0.000000
760	-0.000000
761	-0.480200
762	-0.000580
763	-0.001390
764	-4.540000
765	-6.349325

Continúa na próxima página

Coordenada y	Valor y
766	-5.367857
767	-0.000000
768	-47.846756
769	-12.522851
770	-115.002701
771	-31.055788
772	-121.600000
773	-123.000000
774	-43.900794
775	-23.972227
776	-45.872735
777	-29.844382
778	-0.000000
779	-5.130000
780	-4.540000
781	-4.860000
782	-5.252991
783	-4.775305
784	-0.000000
785	-0.000000
786	-9.420000
787	-5.382857
788	-4.540000
789	-4.684714
790	-4.775263
791	-23.972227
792	103.213076
793	-0.000000
794	0.209488
795	-1.009605
796	-0.000000
797	-0.002850
798	-0.000000
799	-0.049603
800	-0.000000
801	-0.000000
802	-0.247661
803	-0.251212
804	-0.000000
805	-0.778399
806	-0.799478
807	-0.000000
808	-0.006215
809	-0.000000
810	-0.000000
811	-4.540000
812	-6.470000
813	-5.720000
814	-11.030000

Continua na próxima página

Coordenada y	Valor y
815	-2.279656
816	-4.083922
817	-41.936756
818	-6.812851
819	-5.977911
820	-107.182701
821	-11.030000
822	-21.625788
823	-0.000000
824	-17.931416
825	-2.426862
826	-0.440000
827	-46.784562
828	-0.000000
829	-25.351453
830	4.545713
831	2.357773
832	0.367158
833	-0.000000
834	-3.600000
835	-0.000000
836	1.447576
837	1.370000
838	11.270000
839	11.270000
840	-0.000000
841	-0.000000
842	-0.000000
843	1.847009
844	1.554695
845	-1.533170
846	12.305267

4 Observações

- O solver HiGHS foi configurado com o método IPM (Interior Point Method).
- Este arquivo contém a solução detalhada para o problema maros.
- As variáveis duais representam os multiplicadores de Lagrange das restrições.
- Os custos reduzidos (z) indicam o impacto de forçar variáveis não-básicas na base.