

Solução do Problema gfrd-pnc - Solver HiGHS

Análise Computacional

17 de setembro de 2025

1 Informações do Problema

Informações do Problema:

- Nome: gfrd-pnc
- Número de Variáveis: 1092
- Número de Restrições: 616
- Inviabilidade Primal: 0.000e+00
- Inviabilidade Dual: 0.000e+00
- Valor Primal: 6.902e+06
- Valor Dual: -2.983e+05
- Gap: 5.865e-23
- Número de Iterações: 16

2 Variáveis Primais e Custos Reduzidos

Tabela 1: Variáveis primais e custos reduzidos do problema gfrd-pnc

Coordenada x	Valor x	Coordenada z	Valor z
1	15098.760000	1	0.000000
2	15098.760000	2	0.000000
3	15098.760000	3	0.000000
4	15098.760000	4	0.000000
5	18795.420000	5	0.000000
6	18795.420000	6	0.000000
7	3696.660000	7	0.000000
8	3696.660000	8	0.000000
9	3285.590000	9	0.000000
10	3285.590000	10	0.000000
11	3285.590000	11	0.000000
12	3285.590000	12	0.000000

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Coordenada x	Valor x	Coordenada z	Valor z
13	411.070000	13	0.000000
14	411.070000	14	0.000000
15	18795.420000	15	0.000000
16	18795.420000	16	0.000000
17	0.000000	17	1.300000
18	0.000000	18	0.500000
19	44810.480000	19	0.000000
20	44810.480000	20	0.000000
21	26015.060000	21	0.000000
22	26015.060000	22	0.000000
23	0.000000	23	1.150000
24	0.000000	24	0.440000
25	640.250000	25	0.000000
26	640.250000	26	0.000000
27	2190.390000	27	0.000000
28	2190.390000	28	0.000000
29	-0.000000	29	0.000000
30	-0.000000	30	0.000000
31	-0.000000	31	0.000000
32	-0.000000	32	0.000000
33	0.000000	33	0.230000
34	-0.000000	34	0.000000
35	25374.810000	35	0.000000
36	25374.810000	36	0.000000
37	0.000000	37	1.210000
38	0.000000	38	0.460000
39	640.250000	39	0.000000
40	640.250000	40	0.000000
41	24094.310000	41	0.000000
42	24094.310000	42	0.000000
43	0.000000	43	1.120000
44	0.000000	44	0.440000
45	0.000000	45	1.200000
46	0.000000	46	0.460000
47	2190.400000	47	0.000000
48	2190.400000	48	0.000000
49	0.000000	49	1.200000
50	0.000000	50	0.460000
51	21903.910000	51	0.000000
52	21903.910000	52	0.000000
53	0.000000	53	1.300000
54	0.000000	54	0.500000
55	21903.910000	55	0.000000
56	21903.910000	56	0.000000
57	0.000000	57	1.070000
58	0.000000	58	0.410000
59	0.000000	59	1.040000
60	-0.000000	60	0.000000
61	21903.910000	61	0.000000

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Coordenada x	Valor x	Coordenada z	Valor z
62	21903.910000	62	0.000000
63	0.000000	63	1.220000
64	0.000000	64	0.470000
65	0.000000	65	1.020000
66	0.000000	66	0.380000
67	-0.000000	67	0.000000
68	-0.000000	68	0.000000
69	0.000000	69	1.230000
70	0.000000	70	0.220000
71	21903.910000	71	0.000000
72	21903.910000	72	0.000000
73	0.000000	73	1.340000
74	0.000000	74	0.510000
75	0.000000	75	1.380000
76	0.000000	76	0.530000
77	1095.190000	77	0.000000
78	1095.190000	78	0.000000
79	0.000000	79	1.040000
80	0.000000	80	0.390000
81	0.000000	81	3.320000
82	-0.000000	82	0.000000
83	1095.190000	83	0.000000
84	1095.190000	84	0.000000
85	-0.000000	85	0.000000
86	0.000000	86	0.460000
87	-0.000000	87	0.000000
88	-0.000000	88	0.000000
89	-0.000000	89	0.000000
90	0.000000	90	5.770000
91	19713.530000	91	0.000000
92	19713.530000	92	0.000000
93	0.000000	93	1.290000
94	0.000000	94	0.500000
95	18618.330000	95	0.000000
96	18618.330000	96	0.000000
97	0.000000	97	1.160000
98	0.000000	98	0.440000
99	0.000000	99	1.220000
100	0.000000	100	0.470000
101	3285.590000	101	0.000000
102	3285.590000	102	0.000000
103	0.000000	103	1.270000
104	0.000000	104	0.480000
105	2190.390000	105	0.000000
106	2190.390000	106	0.000000
107	0.000000	107	0.890000
108	0.000000	108	0.360000
109	0.000000	109	0.310000
110	0.000000	110	0.100000

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Coordenada x	Valor x	Coordenada z	Valor z
111	-0.000000	111	0.000000
112	-0.000000	112	0.000000
113	0.000000	113	1.040000
114	0.000000	114	0.400000
115	1095.200000	115	0.000000
116	1095.200000	116	0.000000
117	15332.740000	117	0.000000
118	15332.740000	118	0.000000
119	0.000000	119	1.180000
120	0.000000	120	0.460000
121	15332.740000	121	0.000000
122	15332.740000	122	0.000000
123	0.000000	123	1.270000
124	0.000000	124	0.490000
125	14237.550000	125	0.000000
126	14237.550000	126	0.000000
127	0.000000	127	1.300000
128	0.000000	128	0.500000
129	13142.350000	129	0.000000
130	13142.350000	130	0.000000
131	0.000000	131	1.180000
132	0.000000	132	0.460000
133	2190.400000	133	0.000000
134	2190.400000	134	0.000000
135	0.000000	135	1.180000
136	0.000000	136	0.460000
137	1095.190000	137	0.000000
138	1095.190000	138	0.000000
139	15098.760000	139	0.000000
140	15098.760000	140	0.000000
141	15098.760000	141	0.000000
142	15098.760000	142	0.000000
143	2190.400000	143	0.000000
144	2190.400000	144	0.000000
145	0.000000	145	1.130000
146	0.000000	146	0.440000
147	1095.200000	147	0.000000
148	1095.200000	148	0.000000
149	0.000000	149	1.090000
150	0.000000	150	0.420000
151	1095.200000	151	0.000000
152	1095.200000	152	0.000000
153	0.000000	153	1.230000
154	0.000000	154	0.470000
155	1095.200000	155	0.000000
156	1095.200000	156	0.000000
157	0.000000	157	1.150000
158	0.000000	158	0.440000
159	0.000000	159	1.100000

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Coordenada x	Valor x	Coordenada z	Valor z
160	0.000000	160	0.420000
161	1095.200000	161	0.000000
162	1095.200000	162	0.000000
163	-0.000000	163	0.000000
164	0.000000	164	0.250000
165	0.000000	165	0.390000
166	0.000000	166	0.410000
167	0.000000	167	0.670000
168	-0.000000	168	0.000000
169	0.000000	169	1.180000
170	0.000000	170	0.460000
171	-0.000000	171	0.000000
172	-0.000000	172	0.000000
173	-0.000000	173	0.000000
174	0.000000	174	0.440000
175	0.000000	175	1.180000
176	-0.000000	176	0.000000
177	0.000000	177	1.150000
178	-0.000000	178	0.000000
179	1095.200000	179	0.000000
180	1095.200000	180	0.000000
181	0.000000	181	2.730000
182	-0.000000	182	0.000000
183	1095.190000	183	0.000000
184	1095.190000	184	0.000000
185	2190.390000	185	0.000000
186	2190.390000	186	0.000000
187	1095.190000	187	0.000000
188	1095.190000	188	0.000000
189	1095.190000	189	0.000000
190	1095.190000	190	0.000000
191	1095.190000	191	0.000000
192	1095.190000	192	0.000000
193	1095.190000	193	0.000000
194	1095.190000	194	0.000000
195	0.000000	195	14.530000
196	-0.000000	196	0.000000
197	-0.000000	197	0.000000
198	-0.000000	198	0.000000
199	2190.380000	199	0.000000
200	2190.380000	200	0.000000
201	2190.380000	201	0.000000
202	2190.380000	202	0.000000
203	5475.980000	203	0.000000
204	5475.980000	204	0.000000
205	0.000000	205	1.180000
206	0.000000	206	0.460000
207	-0.000000	207	0.000000
208	0.000000	208	7.630000

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Coordenada x	Valor x	Coordenada z	Valor z
209	1095.200000	209	0.000000
210	1095.200000	210	0.000000
211	-0.000000	211	0.000000
212	0.000000	212	7.890000
213	1095.200000	213	0.000000
214	1095.200000	214	0.000000
215	0.000000	215	1.300000
216	0.000000	216	0.510000
217	1095.200000	217	0.000000
218	1095.200000	218	0.000000
219	-0.000000	219	0.000000
220	-0.000000	220	0.000000
221	0.000000	221	1.180000
222	0.000000	222	0.460000
223	-0.000000	223	0.000000
224	-0.000000	224	0.000000
225	0.000000	225	1.340000
226	0.000000	226	0.520000
227	0.000000	227	1.110000
228	0.000000	228	0.430000
229	1095.200000	229	0.000000
230	1095.200000	230	0.000000
231	1095.200000	231	0.000000
232	1095.200000	232	0.000000
233	0.000000	233	1.180000
234	0.000000	234	0.460000
235	-0.000000	235	0.000000
236	-0.000000	236	0.000000
237	15098.760000	237	0.000000
238	15098.760000	238	0.000000
239	2190.390000	239	0.000000
240	2190.390000	240	0.000000
241	1095.190000	241	0.000000
242	1095.190000	242	0.000000
243	3285.600000	243	0.000000
244	3285.600000	244	0.000000
245	0.000000	245	3.760000
246	0.000000	246	1.440000
247	10717.960000	247	0.000000
248	10717.960000	248	0.000000
249	9856.750000	249	0.000000
250	9856.750000	250	0.000000
251	8761.560000	251	0.000000
252	8761.560000	252	0.000000
253	0.000000	253	1.470000
254	0.000000	254	0.560000
255	5475.980000	255	0.000000
256	5475.980000	256	0.000000
257	1095.200000	257	0.000000

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Coordenada x	Valor x	Coordenada z	Valor z
258	1095.200000	258	0.000000
259	1095.200000	259	0.000000
260	1095.200000	260	0.000000
261	-0.000000	261	0.000000
262	-0.000000	262	0.000000
263	-0.000000	263	0.000000
264	-0.000000	264	0.000000
265	-0.000000	265	0.000000
266	-0.000000	266	0.000000
267	-0.000000	267	0.000000
268	-0.000000	268	0.000000
269	-0.000000	269	0.000000
270	-0.000000	270	0.000000
271	2190.400000	271	0.000000
272	2190.400000	272	0.000000
273	0.000000	273	1.240000
274	0.000000	274	0.480000
275	2190.400000	275	0.000000
276	2190.400000	276	0.000000
277	0.000000	277	1.280000
278	0.000000	278	0.490000
279	2190.400000	279	0.000000
280	2190.400000	280	0.000000
281	0.000000	281	1.220000
282	0.000000	282	0.470000
283	1095.200000	283	0.000000
284	1095.200000	284	0.000000
285	0.000000	285	1.140000
286	0.000000	286	0.440000
287	1095.200000	287	0.000000
288	1095.200000	288	0.000000
289	0.000000	289	1.200000
290	0.000000	290	0.460000
291	1095.200000	291	0.000000
292	1095.200000	292	0.000000
293	0.000000	293	1.180000
294	0.000000	294	0.460000
295	-0.000000	295	0.000000
296	-0.000000	296	0.000000
297	0.000000	297	1.420000
298	0.000000	298	0.540000
299	-0.000000	299	0.000000
300	-0.000000	300	0.000000
301	0.000000	301	15.790000
302	-0.000000	302	0.000000
303	-0.000000	303	0.000000
304	-0.000000	304	0.000000
305	0.000000	305	0.043255
306	-0.000000	306	0.000000

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Coordenada x	Valor x	Coordenada z	Valor z
307	-0.000000	307	0.000000
308	-0.000000	308	0.000000
309	1095.190000	309	0.000000
310	1095.190000	310	0.000000
311	2190.380000	311	0.000000
312	2190.380000	312	0.000000
313	0.000000	313	1.120000
314	0.000000	314	0.430000
315	7666.370000	315	0.000000
316	7666.370000	316	0.000000
317	-0.000000	317	0.000000
318	-0.000000	318	0.000000
319	7666.370000	319	0.000000
320	7666.370000	320	0.000000
321	-0.000000	321	0.000000
322	-0.000000	322	0.000000
323	-0.000000	323	0.000000
324	-0.000000	324	0.000000
325	-0.000000	325	0.000000
326	-0.000000	326	0.000000
327	4380.780000	327	0.000000
328	4380.780000	328	0.000000
329	0.000000	329	1.310000
330	0.000000	330	0.500000
331	4380.780000	331	0.000000
332	4380.780000	332	0.000000
333	0.000000	333	1.400000
334	0.000000	334	0.540000
335	0.000000	335	1.060000
336	0.000000	336	0.410000
337	2190.390000	337	0.000000
338	2190.390000	338	0.000000
339	2190.390000	339	0.000000
340	2190.390000	340	0.000000
341	0.000000	341	1.180000
342	0.000000	342	0.460000
343	0.000000	343	1.180000
344	0.000000	344	0.460000
345	1095.200000	345	0.000000
346	1095.200000	346	0.000000
347	0.000000	347	10.400000
348	-0.000000	348	0.000000
349	2190.390000	349	0.000000
350	2190.390000	350	0.000000
351	-0.000000	351	0.000000
352	-0.000000	352	0.000000
353	0.000000	353	1.270000
354	0.000000	354	0.480000
355	7666.380000	355	0.000000

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Coordenada x	Valor x	Coordenada z	Valor z
356	7666.380000	356	0.000000
357	0.000000	357	1.220000
358	0.000000	358	0.470000
359	2190.400000	359	0.000000
360	2190.400000	360	0.000000
361	1095.190000	361	0.000000
362	1095.190000	362	0.000000
363	1095.190000	363	0.000000
364	1095.190000	364	0.000000
365	0.000000	365	1.100000
366	0.000000	366	0.420000
367	6571.180000	367	0.000000
368	6571.180000	368	0.000000
369	3285.590000	369	0.000000
370	3285.590000	370	0.000000
371	3285.590000	371	0.000000
372	3285.590000	372	0.000000
373	2190.390000	373	0.000000
374	2190.390000	374	0.000000
375	-0.000000	375	0.000000
376	-0.000000	376	0.000000
377	0.000000	377	1.140000
378	0.000000	378	0.420000
379	-0.000000	379	0.000000
380	-0.000000	380	0.000000
381	0.000000	381	2.120000
382	0.000000	382	0.800000
383	0.000000	383	1.150000
384	0.000000	384	0.450000
385	-0.000000	385	0.000000
386	-0.000000	386	0.000000
387	-0.000000	387	0.000000
388	-0.000000	388	0.000000
389	0.000000	389	0.120000
390	0.000000	390	0.070000
391	0.000000	391	1.200000
392	0.000000	392	0.460000
393	-0.000000	393	0.000000
394	0.000000	394	0.020000
395	0.000000	395	13.560000
396	-0.000000	396	0.000000
397	-0.000000	397	0.000000
398	-0.000000	398	0.000000
399	-0.000000	399	0.000000
400	-0.000000	400	0.000000
401	0.000000	401	12.880000
402	-0.000000	402	0.000000
403	1095.200000	403	0.000000
404	1095.200000	404	0.000000

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Coordenada x	Valor x	Coordenada z	Valor z
405	1095.200000	405	0.000000
406	1095.200000	406	0.000000
407	-0.000000	407	0.000000
408	-0.000000	408	0.000000
409	0.000000	409	15.040000
410	-0.000000	410	0.000000
411	-0.000000	411	0.000000
412	0.000000	412	8.610000
413	-0.000000	413	0.000000
414	-0.000000	414	0.000000
415	-0.000000	415	0.000000
416	0.000000	416	8.420000
417	0.000000	417	1.140000
418	0.000000	418	0.440000
419	1095.200000	419	0.000000
420	1095.200000	420	0.000000
421	1095.200000	421	0.000000
422	1095.200000	422	0.000000
423	0.000000	423	1.180000
424	0.000000	424	0.460000
425	1095.200000	425	0.000000
426	1095.200000	426	0.000000
427	0.000000	427	1.100000
428	0.000000	428	0.420000
429	0.000000	429	1.060000
430	0.000000	430	0.390000
431	-0.000000	431	0.000000
432	-0.000000	432	0.000000
433	-0.000000	433	0.000000
434	-0.000000	434	0.000000
435	-0.000000	435	0.000000
436	-0.000000	436	0.000000
437	0.000000	437	1.140000
438	0.000000	438	0.440000
439	-0.000000	439	0.000000
440	0.000000	440	0.460000
441	-0.000000	441	0.000000
442	-0.000000	442	0.000000
443	0.000000	443	1.246745
444	0.000000	444	0.500000
445	0.000000	445	1.180000
446	-0.000000	446	0.000000
447	0.000000	447	1.220000
448	0.000000	448	0.470000
449	-0.000000	449	0.000000
450	-0.000000	450	0.000000
451	0.000000	451	1.046745
452	0.000000	452	0.440000
453	-0.000000	453	0.000000

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Coordenada x	Valor x	Coordenada z	Valor z
454	-0.000000	454	0.000000
455	0.000000	455	0.103255
456	-0.000000	456	0.000000
457	-0.000000	457	0.000000
458	-0.000000	458	0.000000
459	-0.000000	459	0.000000
460	-0.000000	460	0.000000
461	-0.000000	461	0.000000
462	-0.000000	462	0.000000
463	-0.000000	463	0.000000
464	-0.000000	464	0.000000
465	0.000000	465	15.093255
466	-0.000000	466	0.000000
467	-0.000000	467	0.000000
468	-0.000000	468	0.000000
469	0.000000	469	1.020000
470	0.000000	470	0.400000
471	0.000000	471	0.670000
472	0.000000	472	0.250000
473	-0.000000	473	0.000000
474	-0.000000	474	0.000000
475	0.000000	475	0.680000
476	0.000000	476	0.240000
477	0.000000	477	1.100000
478	0.000000	478	0.420000
479	0.000000	479	1.360000
480	0.000000	480	0.520000
481	2190.400000	481	0.000000
482	2190.400000	482	0.000000
483	0.000000	483	1.290000
484	0.000000	484	0.490000
485	2190.400000	485	0.000000
486	2190.400000	486	0.000000
487	0.000000	487	1.200000
488	0.000000	488	0.460000
489	3285.600000	489	0.000000
490	3285.600000	490	0.000000
491	0.000000	491	1.240000
492	0.000000	492	0.470000
493	3285.600000	493	0.000000
494	3285.600000	494	0.000000
495	4380.780000	495	0.000000
496	4380.780000	496	0.000000
497	4380.780000	497	0.000000
498	4380.780000	498	0.000000
499	3285.580000	499	0.000000
500	3285.580000	500	0.000000
501	2190.380000	501	0.000000
502	2190.380000	502	0.000000

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Coordenada x	Valor x	Coordenada z	Valor z
503	1095.190000	503	0.000000
504	1095.190000	504	0.000000
505	0.000000	505	12.430000
506	-0.000000	506	0.000000
507	1095.200000	507	0.000000
508	1095.200000	508	0.000000
509	0.000000	509	11.970000
510	-0.000000	510	0.000000
511	-0.000000	511	0.000000
512	-0.000000	512	0.000000
513	0.000000	513	12.660000
514	-0.000000	514	0.000000
515	0.000000	515	1.160000
516	0.000000	516	0.450000
517	0.000000	517	1.100000
518	-0.000000	518	0.000000
519	-0.000000	519	0.000000
520	0.000000	520	0.420000
521	-0.000000	521	0.000000
522	-0.000000	522	0.000000
523	0.000000	523	1.120000
524	0.000000	524	0.440000
525	-0.000000	525	0.000000
526	0.000000	526	0.400000
527	0.000000	527	1.060000
528	-0.000000	528	0.000000
529	-0.000000	529	0.000000
530	0.000000	530	0.630000
531	-0.000000	531	0.000000
532	-0.000000	532	0.000000
533	-0.000000	533	0.000000
534	-0.000000	534	0.000000
535	0.000000	535	1.630000
536	-0.000000	536	0.000000
537	-0.000000	537	0.000000
538	0.000000	538	0.110000
539	0.000000	539	1.060000
540	0.000000	540	0.300000
541	0.000000	541	0.476745
542	-0.000000	542	0.000000
543	0.000000	543	0.723255
544	0.000000	544	0.470000
545	-0.000000	545	0.000000
546	-0.000000	546	0.000000
547	0.000000	547	1.180000
548	0.000000	548	0.460000
549	-0.000000	549	0.000000
550	-0.000000	550	0.000000
551	0.000000	551	1.130000

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Coordenada x	Valor x	Coordenada z	Valor z
552	0.000000	552	0.440000
553	-0.000000	553	0.000000
554	-0.000000	554	0.000000
555	0.000000	555	0.810000
556	0.000000	556	0.320000
557	0.000000	557	1.120000
558	0.000000	558	0.430000
559	-0.000000	559	0.000000
560	-0.000000	560	0.000000
561	0.000000	561	10.160000
562	-0.000000	562	0.000000
563	0.000000	563	1.020000
564	0.000000	564	0.400000
565	0.000000	565	0.120000
566	-0.000000	566	0.000000
567	-0.000000	567	0.000000
568	-0.000000	568	0.000000
569	-0.000000	569	0.000000
570	0.000000	570	0.420000
571	-0.000000	571	0.000000
572	-0.000000	572	0.000000
573	0.000000	573	9.620000
574	-0.000000	574	0.000000
575	0.000000	575	1.080000
576	0.000000	576	0.000000
577	-0.000000	577	0.000000
578	-0.000000	578	0.000000
579	-0.000000	579	0.000000
580	-0.000000	580	0.000000
581	1095.190000	581	0.000000
582	1095.190000	582	0.000000
583	2190.380000	583	0.000000
584	2190.380000	584	0.000000
585	1095.190000	585	0.000000
586	1095.190000	586	0.000000
587	3285.580000	587	0.000000
588	3285.580000	588	0.000000
589	2190.380000	589	0.000000
590	2190.380000	590	0.000000
591	0.000000	591	1.260000
592	0.000000	592	0.480000
593	7666.380000	593	0.000000
594	7666.380000	594	0.000000
595	4380.780000	595	0.000000
596	4380.780000	596	0.000000
597	0.000000	597	1.180000
598	0.000000	598	0.460000
599	7666.380000	599	0.000000
600	7666.380000	600	0.000000

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Coordenada x	Valor x	Coordenada z	Valor z
601	0.000000	601	1.290000
602	0.000000	602	0.500000
603	7666.380000	603	0.000000
604	7666.380000	604	0.000000
605	0.000000	605	1.150000
606	0.000000	606	0.440000
607	0.000000	607	1.040000
608	0.000000	608	0.400000
609	8761.580000	609	0.000000
610	8761.580000	610	0.000000
611	1095.200000	611	0.000000
612	1095.200000	612	0.000000
613	-0.000000	613	0.000000
614	-0.000000	614	0.000000
615	0.000000	615	1.510000
616	0.000000	616	0.590000
617	0.000000	617	1.060000
618	0.000000	618	0.420000
619	0.000000	619	0.630000
620	0.000000	620	0.250000
621	0.000000	621	1.140000
622	0.000000	622	0.440000
623	14237.560000	623	0.000000
624	14237.560000	624	0.000000
625	0.000000	625	1.240000
626	0.000000	626	0.480000
627	0.000000	627	1.230000
628	0.000000	628	0.470000
629	15332.760000	629	0.000000
630	15332.760000	630	0.000000
631	25189.520000	631	0.000000
632	25189.520000	632	0.000000
633	0.000000	633	1.180000
634	0.000000	634	0.460000
635	8761.560000	635	0.000000
636	8761.560000	636	0.000000
637	8761.560000	637	0.000000
638	8761.560000	638	0.000000
639	7666.360000	639	0.000000
640	7666.360000	640	0.000000
641	7666.360000	641	0.000000
642	7666.360000	642	0.000000
643	6571.160000	643	0.000000
644	6571.160000	644	0.000000
645	0.000000	645	1.290000
646	0.000000	646	0.500000
647	6571.160000	647	0.000000
648	6571.160000	648	0.000000
649	0.000000	649	0.510000

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Coordenada x	Valor x	Coordenada z	Valor z
650	0.000000	650	0.190000
651	5475.980000	651	0.000000
652	5475.980000	652	0.000000
653	0.000000	653	1.140000
654	0.000000	654	0.440000
655	0.000000	655	1.140000
656	0.000000	656	0.440000
657	-0.000000	657	0.000000
658	-0.000000	658	0.000000
659	0.000000	659	1.220000
660	0.000000	660	0.460000
661	-0.000000	661	0.000000
662	-0.000000	662	0.000000
663	0.000000	663	1.180000
664	0.000000	664	0.460000
665	0.000000	665	1.300000
666	0.000000	666	0.510000
667	0.000000	667	0.270000
668	0.000000	668	0.110000
669	-0.000000	669	0.000000
670	-0.000000	670	0.000000
671	5475.980000	671	0.000000
672	5475.980000	672	0.000000
673	0.000000	673	1.290000
674	0.000000	674	0.490000
675	0.000000	675	1.260000
676	0.000000	676	0.480000
677	1095.200000	677	0.000000
678	1095.200000	678	0.000000
679	0.000000	679	1.180000
680	0.000000	680	0.460000
681	-0.000000	681	0.000000
682	-0.000000	682	0.000000
683	-0.000000	683	0.000000
684	-0.000000	684	0.000000
685	0.000000	685	1.190000
686	0.000000	686	0.500000
687	-0.000000	687	0.000000
688	0.000000	688	0.460000
689	4380.780000	689	0.000000
690	4380.780000	690	0.000000
691	0.000000	691	1.180000
692	-0.000000	692	0.000000
693	0.000000	693	1.250000
694	0.000000	694	0.480000
695	-0.000000	695	0.000000
696	-0.000000	696	0.000000
697	0.000000	697	1.050000
698	0.000000	698	0.410000

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Coordenada x	Valor x	Coordenada z	Valor z
699	0.000000	699	1.100000
700	0.000000	700	0.420000
701	-0.000000	701	0.000000
702	-0.000000	702	0.000000
703	0.000000	703	17.440000
704	-0.000000	704	0.000000
705	-0.000000	705	0.000000
706	-0.000000	706	0.000000
707	-0.000000	707	0.000000
708	-0.000000	708	0.000000
709	-0.000000	709	0.000000
710	-0.000000	710	0.000000
711	0.000000	711	19.800000
712	-0.000000	712	0.000000
713	1095.200000	713	0.000000
714	1095.200000	714	0.000000
715	-0.000000	715	0.000000
716	-0.000000	716	0.000000
717	0.000000	717	1.060000
718	0.000000	718	0.410000
719	1095.200000	719	0.000000
720	1095.200000	720	0.000000
721	0.000000	721	1.310000
722	0.000000	722	0.510000
723	1095.200000	723	0.000000
724	1095.200000	724	0.000000
725	0.000000	725	1.260000
726	0.000000	726	0.480000
727	2190.400000	727	0.000000
728	2190.400000	728	0.000000
729	0.000000	729	1.590000
730	0.000000	730	0.620000
731	2190.400000	731	0.000000
732	2190.400000	732	0.000000
733	0.000000	733	0.650000
734	0.000000	734	0.270000
735	0.000000	735	1.430000
736	0.000000	736	0.550000
737	1095.200000	737	0.000000
738	1095.200000	738	0.000000
739	1095.200000	739	0.000000
740	1095.200000	740	0.000000
741	-0.000000	741	0.000000
742	-0.000000	742	0.000000
743	-0.000000	743	0.000000
744	0.000000	744	8.430000
745	0.000000	745	13.650000
746	-0.000000	746	0.000000
747	2190.380000	747	0.000000

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Coordenada x	Valor x	Coordenada z	Valor z
748	2190.380000	748	0.000000
749	1095.190000	749	0.000000
750	1095.190000	750	0.000000
751	-0.000000	751	0.000000
752	0.000000	752	8.560000
753	1095.190000	753	0.000000
754	1095.190000	754	0.000000
755	2190.400000	755	0.000000
756	2190.400000	756	0.000000
757	-0.000000	757	0.000000
758	-0.000000	758	0.000000
759	0.000000	759	1.120000
760	0.000000	760	0.440000
761	-0.000000	761	0.000000
762	-0.000000	762	0.000000
763	0.000000	763	1.100000
764	0.000000	764	0.420000
765	-0.000000	765	0.000000
766	-0.000000	766	0.000000
767	0.000000	767	1.240000
768	0.000000	768	0.480000
769	-0.000000	769	0.000000
770	-0.000000	770	0.000000
771	1095.200000	771	0.000000
772	1095.200000	772	0.000000
773	0.000000	773	1.180000
774	0.000000	774	0.460000
775	3285.580000	775	0.000000
776	3285.580000	776	0.000000
777	0.000000	777	1.350000
778	0.000000	778	0.520000
779	4380.780000	779	0.000000
780	4380.780000	780	0.000000
781	4380.780000	781	0.000000
782	4380.780000	782	0.000000
783	4380.780000	783	0.000000
784	4380.780000	784	0.000000
785	4380.780000	785	0.000000
786	4380.780000	786	0.000000
787	3285.580000	787	0.000000
788	3285.580000	788	0.000000
789	4380.780000	789	0.000000
790	4380.780000	790	0.000000
791	0.000000	791	1.260000
792	0.000000	792	0.490000
793	-0.000000	793	0.000000
794	0.000000	794	6.810000
795	1095.200000	795	0.000000
796	1095.200000	796	0.000000

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Coordenada x	Valor x	Coordenada z	Valor z
797	1095.200000	797	0.000000
798	1095.200000	798	0.000000
799	1095.200000	799	0.000000
800	1095.200000	800	0.000000
801	0.000000	801	1.090000
802	-0.000000	802	0.000000
803	-0.000000	803	0.000000
804	0.000000	804	0.420000
805	-0.000000	805	0.000000
806	0.000000	806	0.400000
807	0.000000	807	1.020000
808	-0.000000	808	0.000000
809	0.000000	809	1.140000
810	0.000000	810	0.440000
811	-0.000000	811	0.000000
812	-0.000000	812	0.000000
813	-0.000000	813	0.000000
814	-0.000000	814	0.000000
815	0.000000	815	1.300000
816	0.000000	816	0.510000
817	0.000000	817	0.630000
818	0.000000	818	0.270000
819	-0.000000	819	0.000000
820	-0.000000	820	0.000000
821	0.000000	821	0.460000
822	0.000000	822	0.150000
823	3285.580000	823	0.000000
824	3285.580000	824	0.000000
825	3285.580000	825	0.000000
826	3285.580000	826	0.000000
827	2190.380000	827	0.000000
828	2190.380000	828	0.000000
829	3285.580000	829	0.000000
830	3285.580000	830	0.000000
831	3285.580000	831	0.000000
832	3285.580000	832	0.000000
833	3285.580000	833	0.000000
834	3285.580000	834	0.000000
835	0.642046	835	0.000000
836	0.000000	836	563.420000
837	1.000000	837	-14547.821317
838	1.000000	838	-1389.342500
839	-0.000000	839	0.000000
840	1.000000	840	-1408.550000
841	1.000000	841	-870.740000
842	0.000000	842	128.050000
843	-0.000000	843	0.000000
844	0.000000	844	11360.533237
845	0.000000	845	640.782513

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Coordenada x	Valor x	Coordenada z	Valor z
846	0.298856	846	0.000000
847	1.000000	847	-96.514306
848	0.000000	848	987.648111
849	0.000000	849	2267.386751
850	-0.000000	850	0.000000
851	0.000000	851	11360.533237
852	0.000000	852	640.782513
853	0.298856	853	0.000000
854	1.000000	854	-96.514306
855	0.000000	855	987.648111
856	0.000000	856	2267.386751
857	0.000000	857	1658.247500
858	1.000000	858	-12675.029317
859	0.000000	859	9068.024272
860	1.000000	860	0.000000
861	0.000000	861	9068.024272
862	1.000000	862	0.000000
863	0.000000	863	9068.024272
864	1.000000	864	0.000000
865	0.000000	865	11360.533237
866	0.000000	866	640.782513
867	0.298856	867	0.000000
868	1.000000	868	-96.514306
869	0.000000	869	987.648111
870	0.000000	870	2267.386751
871	0.000000	871	640.782513
872	0.298856	872	0.000000
873	1.000000	873	-96.514306
874	0.000000	874	2267.386751
875	0.000000	875	3963.147500
876	1.000000	876	-8732.309317
877	0.000000	877	11360.533237
878	0.000000	878	640.782513
879	0.298856	879	0.000000
880	1.000000	880	-96.514306
881	0.000000	881	987.648111
882	0.000000	882	2267.386751
883	0.000000	883	1722.272500
884	0.000000	884	1178.060000
885	1.000000	885	-13496.429317
886	0.000000	886	8803.437500
887	0.000000	887	3188.445000
888	0.000000	888	1523.795000
889	0.000000	889	2100.020000
890	-0.000000	890	0.000000
891	-0.000000	891	0.000000
892	0.000000	892	4686.630000
893	0.000000	893	640.782513
894	0.298856	894	0.000000

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Coordenada x	Valor x	Coordenada z	Valor z
895	1.000000	895	-96.514306
896	0.000000	896	2267.386751
897	0.000000	897	5730.237500
898	1.000000	898	-5709.557317
899	0.000000	899	6831.467500
900	0.000000	900	640.782513
901	0.298856	901	0.000000
902	1.000000	902	-96.514306
903	0.000000	903	2267.386751
904	0.000000	904	6825.065000
905	1.000000	905	-3836.765317
906	0.000000	906	9068.024272
907	1.000000	907	0.000000
908	0.000000	908	6869.882500
909	0.000000	909	9068.024272
910	1.000000	910	0.000000
911	0.000000	911	1466.172500
912	0.000000	912	2196.057500
913	1.000000	913	-11755.061317
914	0.000000	914	2701.855000
915	0.000000	915	720.547097
916	0.000000	916	87.740482
917	1.000000	917	0.000000
918	0.000000	918	2106.422500
919	1.000000	919	-11908.389317
920	0.000000	920	640.782513
921	0.298856	921	0.000000
922	1.000000	922	-96.514306
923	0.000000	923	2267.386751
924	0.000000	924	640.782513
925	0.298856	925	0.000000
926	1.000000	926	-96.514306
927	0.000000	927	2267.386751
928	0.000000	928	640.782513
929	0.298856	929	0.000000
930	1.000000	930	-96.514306
931	0.000000	931	2267.386751
932	0.000000	932	6229.632500
933	0.000000	933	640.782513
934	0.298856	934	0.000000
935	1.000000	935	-96.514306
936	0.000000	936	2267.386751
937	0.000000	937	2804.295000
938	1.000000	938	-10714.621317
939	0.000000	939	5749.445000
940	1.000000	940	-5676.701317
941	0.000000	941	9068.024272
942	1.000000	942	0.000000
943	0.000000	943	8937.890000

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Coordenada x	Valor x	Coordenada z	Valor z
944	1.000000	944	-222.605317
945	0.000000	945	9443.687500
946	0.000000	946	642.602683
947	-0.000000	947	0.000000
948	0.000000	948	12365.311772
949	0.000000	949	5640.280000
950	0.000000	950	10058.327500
951	0.000000	951	10596.137500
952	0.000000	952	4174.430000
953	0.000000	953	8912.280000
954	0.000000	954	11360.533237
955	0.000000	955	640.782513
956	0.298856	956	0.000000
957	1.000000	957	-96.514306
958	0.000000	958	987.648111
959	0.000000	959	2267.386751
960	0.000000	960	640.782513
961	0.298856	961	0.000000
962	1.000000	962	-96.514306
963	0.000000	963	2267.386751
964	0.000000	964	5051.572500
965	1.000000	965	-6870.469317
966	0.000000	966	640.782513
967	0.298856	967	0.000000
968	1.000000	968	-96.514306
969	0.000000	969	2267.386751
970	0.000000	970	9068.024272
971	1.000000	971	0.000000
972	0.000000	972	7061.957500
973	-0.000000	973	0.000000
974	0.000000	974	6223.230000
975	0.000000	975	640.782513
976	0.298856	976	0.000000
977	1.000000	977	-96.514306
978	0.000000	978	2267.386751
979	0.000000	979	9068.024272
980	1.000000	980	0.000000
981	0.000000	981	9129.965000
982	0.000000	982	105.954683
983	0.000000	983	9149.172500
984	-0.000000	984	0.000000
985	0.000000	985	11334.509272
986	-0.000000	986	0.000000
987	0.000000	987	9068.024272
988	1.000000	988	0.000000
989	-0.000000	989	0.000000
990	0.000000	990	9068.024272
991	1.000000	991	0.000000
992	0.000000	992	10071.132500

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Coordenada x	Valor x	Coordenada z	Valor z
993	0.000000	993	9068.024272
994	-0.000000	994	0.000000
995	0.000000	995	10239.681772
996	0.000000	996	9644.249272
997	0.000000	997	985.680000
998	-0.000000	998	0.000000
999	0.000000	999	5935.117500
1000	-0.000000	1000	0.000000
1001	0.000000	1001	8991.194272
1002	0.000000	1002	640.782513
1003	0.298856	1003	0.000000
1004	1.000000	1004	-96.514306
1005	0.000000	1005	2267.386751
1006	0.000000	1006	9068.024272
1007	1.000000	1007	0.000000
1008	0.000000	1008	640.782513
1009	0.298856	1009	0.000000
1010	1.000000	1010	-96.514306
1011	0.000000	1011	2267.386751
1012	0.000000	1012	9068.024272
1013	1.000000	1013	0.000000
1014	0.000000	1014	9074.426772
1015	-0.000000	1015	0.000000
1016	0.000000	1016	9068.024272
1017	1.000000	1017	0.000000
1018	0.000000	1018	9068.024272
1019	1.000000	1019	0.000000
1020	-0.000000	1020	0.000000
1021	-0.000000	1021	0.000000
1022	0.000000	1022	5704.627500
1023	-0.000000	1023	0.000000
1024	0.000000	1024	6332.072500
1025	0.000000	1025	4712.240000
1026	0.000000	1026	4955.535000
1027	0.000000	1027	5166.817500
1028	0.000000	1028	9430.882500
1029	0.000000	1029	620.698683
1030	0.000000	1030	640.782513
1031	0.298856	1031	0.000000
1032	1.000000	1032	-96.514306
1033	0.000000	1033	2267.386751
1034	0.000000	1034	11360.533237
1035	0.000000	1035	640.782513
1036	0.298856	1036	0.000000
1037	1.000000	1037	-96.514306
1038	0.000000	1038	987.648111
1039	0.000000	1039	2267.386751
1040	0.000000	1040	640.782513
1041	0.298856	1041	0.000000

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Coordenada x	Valor x	Coordenada z	Valor z
1042	1.000000	1042	-96.514306
1043	0.000000	1043	2267.386751
1044	0.000000	1044	9068.024272
1045	1.000000	1045	0.000000
1046	0.000000	1046	3335.702500
1047	1.000000	1047	-9805.605317
1048	0.000000	1048	9068.024272
1049	1.000000	1049	0.000000
1050	0.000000	1050	3963.147500
1051	0.000000	1051	3546.985000
1052	1.000000	1052	-9444.189317
1053	0.000000	1053	4071.990000
1054	0.000000	1054	1293.305000
1055	1.000000	1055	-13299.293317
1056	0.000000	1056	2503.377500
1057	1.000000	1057	-11229.365317
1058	0.000000	1058	4468.945000
1059	0.000000	1059	4936.327500
1060	0.000000	1060	4001.562500
1061	-0.000000	1061	0.000000
1062	0.000000	1062	11159.557500
1063	0.000000	1063	12151.945000
1064	-0.000000	1064	0.000000
1065	0.000000	1065	9068.024272
1066	1.000000	1066	0.000000
1067	-0.000000	1067	0.000000
1068	0.000000	1068	640.782513
1069	0.298856	1069	0.000000
1070	1.000000	1070	-96.514306
1071	0.000000	1071	2267.386751
1072	0.000000	1072	9068.024272
1073	1.000000	1073	0.000000
1074	0.000000	1074	640.782513
1075	0.298856	1075	0.000000
1076	1.000000	1076	-96.514306
1077	0.000000	1077	2267.386751
1078	0.000000	1078	640.782513
1079	0.298856	1079	0.000000
1080	1.000000	1080	-96.514306
1081	0.000000	1081	2267.386751
1082	0.000000	1082	9068.024272
1083	1.000000	1083	0.000000
1084	0.000000	1084	9068.024272
1085	1.000000	1085	0.000000
1086	0.000000	1086	9068.024272
1087	1.000000	1087	0.000000
1088	0.000000	1088	4436.932500
1089	0.000000	1089	9068.024272
1090	1.000000	1090	0.000000

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Coordenada x	Valor x	Coordenada z	Valor z
1091	70000.000000	1091	105.090047
1092	70000.000000	1092	0.000000

3 Variáveis Duais (Multiplicadores de Lagrange)

Tabela 2: Variáveis duais do problema gfrd-pnc

Coordenada y	Valor y
1	-93.340047
2	4.530000
3	-94.050047
4	4.260000
5	-94.700047
6	4.010000
7	-95.680047
8	3.630000
9	-94.070047
10	4.250000
11	-93.490047
12	4.470000
13	-92.900047
14	4.700000
15	-93.540047
16	4.460000
17	-96.320047
18	3.380000
19	-95.690047
20	3.620000
21	-105.090047
22	-0.000000
23	-95.120047
24	3.840000
25	-95.100047
26	3.850000
27	-92.240047
28	4.960000
29	-94.460047
30	4.100000
31	-93.900047
32	4.320000
33	-93.600047
34	4.520000
35	-94.550047
36	4.060000
37	-94.510047
38	4.070000

Continua na próxima página

Coordenada y	Valor y
39	-93.990047
40	4.280000
41	-93.980047
42	4.280000
43	-93.390047
44	4.510000
45	-93.390047
46	4.510000
47	-92.870047
48	4.710000
49	-93.820047
50	4.740000
51	-92.240047
52	4.950000
53	-92.360047
54	4.900000
55	-91.630047
56	4.930000
57	-91.680047
58	5.160000
59	-91.660047
60	5.170000
61	-91.150047
62	5.360000
63	-94.450047
64	5.370000
65	-91.720047
66	5.600000
67	-90.610047
68	5.570000
69	-90.080047
70	-0.000000
71	-90.960047
72	5.440000
73	-90.350047
74	5.670000
75	-90.330047
76	5.680000
77	-89.710047
78	5.910000
79	-89.410047
80	6.040000
81	-89.930047
82	5.840000
83	-90.480047
84	5.630000
85	-89.740047
86	5.910000
87	-89.060047
Continua na próxima página	

Coordenada y	Valor y
88	6.170000
89	-88.420047
90	6.410000
91	-87.830047
92	6.640000
93	-92.800047
94	4.740000
95	-89.190047
96	6.110000
97	-91.160047
98	5.370000
99	-91.880047
100	5.090000
101	-92.580047
102	4.820000
103	-92.240047
104	4.960000
105	-91.690047
106	5.170000
107	-91.060047
108	5.410000
109	-91.760047
110	5.140000
111	-91.170047
112	5.370000
113	-92.210047
114	4.970000
115	-94.300047
116	5.220000
117	-89.950047
118	5.850000
119	-90.500047
120	5.640000
121	-91.600047
122	5.210000
123	-89.330047
124	6.090000
125	-88.790047
126	6.300000
127	-88.260047
128	6.500000
129	-87.670047
130	6.730000
131	-97.580047
132	8.500000
133	-83.610047
134	8.280000
135	-84.160047
136	8.070000
Continua na próxima página	

Coordenada y	Valor y
137	-85.280047
138	7.630000
139	-85.830047
140	7.420000
141	-86.510047
142	7.160000
143	-87.070047
144	6.940000
145	-87.730047
146	6.690000
147	-86.480047
148	7.170000
149	-85.270047
150	-0.000000
151	-85.830047
152	7.410000
153	-86.410047
154	7.190000
155	-84.570047
156	-0.000000
157	-85.210047
158	7.650000
159	-85.780047
160	7.430000
161	-85.120047
162	7.690000
163	-84.530047
164	7.920000
165	-83.860047
166	8.180000
167	-84.970047
168	7.740000
169	-84.410047
170	7.960000
171	-85.560047
172	7.510000
173	-83.840047
174	8.180000
175	-83.840047
176	8.180000
177	-91.070047
178	5.420000
179	-90.370047
180	5.670000
181	-88.490047
182	6.390000
183	-90.600047
184	5.590000
185	-90.050047
Continua na próxima página	

Coordenada y	Valor y
186	5.800000
187	-89.490047
188	6.020000
189	-88.280047
190	6.480000
191	-87.620047
192	6.730000
193	-87.050047
194	6.950000
195	-86.410047
196	7.200000
197	-85.810047
198	7.430000
199	-85.240047
200	7.650000
201	-84.660047
202	7.870000
203	-81.580047
204	9.050000
205	-82.190047
206	8.820000
207	-85.860047
208	7.410000
209	-85.220047
210	7.650000
211	-84.630047
212	7.880000
213	-84.060047
214	8.100000
215	-83.450047
216	8.330000
217	-82.880047
218	8.550000
219	-82.170047
220	8.820000
221	-79.676791
222	9.910000
223	-80.266791
224	9.680000
225	-97.910047
226	8.830000
227	-82.680047
228	8.610000
229	-83.290047
230	8.380000
231	-83.276791
232	8.360000
233	-84.720047
234	7.850000
Continua na próxima página	

Coordenada y	Valor y
235	-88.830047
236	6.270000
237	-82.930047
238	8.530000
239	-84.020047
240	8.110000
241	-83.480047
242	8.320000
243	-87.150047
244	6.900000
245	-86.680047
246	7.080000
247	-86.150047
248	7.280000
249	-87.230047
250	6.870000
251	-96.410047
252	7.330000
253	-86.650047
254	7.090000
255	-84.970047
256	7.740000
257	-85.560047
258	7.510000
259	-83.210047
260	8.420000
261	-87.830047
262	6.640000
263	-86.510047
264	7.150000
265	-85.980047
266	7.350000
267	-86.130047
268	7.290000
269	-84.290047
270	8.010000
271	-84.800047
272	7.820000
273	-83.230047
274	8.410000
275	-84.240047
276	8.040000
277	-83.680047
278	8.260000
279	-97.300047
280	8.220000
281	-80.836791
282	9.460000
283	-81.476791
Continua na próxima página	

Coordenada y	Valor y
284	9.210000
285	-84.800047
286	7.810000
287	-85.400047
288	7.580000
289	-97.110047
290	8.030000
291	-84.370047
292	7.970000
293	-83.810047
294	8.190000
295	-83.240047
296	8.410000
297	-97.710047
298	8.630000
299	-82.730047
300	-0.000000
301	-83.780047
302	8.200000
303	-83.210047
304	-0.000000
305	-85.390047
306	7.600000
307	-84.820047
308	7.820000
309	-86.070047
310	7.340000
311	-84.230047
312	8.050000
313	-82.686791
314	8.130000
315	-83.276791
316	7.900000
317	-82.646791
318	8.600000
319	-82.066791
320	8.980000
321	-82.736791
322	8.720000
323	-83.376791
324	8.470000
325	-97.810047
326	8.730000
327	-85.990047
328	7.350000
329	-86.850047
330	7.040000
331	-86.340047
332	7.240000
Continua na próxima página	

Coordenada y	Valor y
333	-86.970047
334	6.990000
335	-86.270047
336	7.250000
337	-85.790047
338	7.450000
339	-86.750047
340	7.080000
341	-87.350047
342	6.850000
343	-87.950047
344	6.620000
345	-88.570047
346	6.380000
347	-87.430047
348	6.820000
349	-87.980047
350	6.610000
351	-86.880047
352	7.030000
353	-86.270047
354	7.260000
355	-85.690047
356	7.480000
357	-85.130047
358	7.700000
359	-97.000047
360	7.920000
361	-85.620047
362	7.510000
363	-96.870047
364	7.790000
365	-85.080047
366	7.720000
367	-97.060047
368	7.980000
369	-82.726791
370	7.690000
371	-83.286791
372	7.470000
373	-83.816791
374	7.670000
375	-84.586791
376	8.000000
377	-83.946791
378	8.250000
379	-85.116791
380	7.900000
381	-85.250047
Continua na próxima página	

Coordenada y	Valor y
382	7.660000
383	-85.840047
384	7.430000
385	-86.400047
386	7.210000
387	-87.700047
388	6.710000
389	-96.370047
390	7.290000
391	-87.930047
392	6.210000
393	-87.420047
394	6.410000
395	-88.440047
396	5.970000
397	-87.960047
398	6.620000
399	-86.810047
400	6.640000
401	-95.920047
402	6.840000
403	-88.510047
404	6.410000
405	-82.910047
406	8.560000
407	-83.460047
408	8.350000
409	-85.340047
410	7.620000
411	-85.910047
412	7.400000
413	-86.470047
414	7.180000
415	-84.790047
416	7.830000
417	-85.600047
418	7.510000
419	-86.270047
420	7.250000
421	-84.960047
422	7.760000
423	-89.160047
424	6.150000
425	-89.750047
426	5.920000
427	-90.300047
428	5.710000
429	-89.780047
430	5.910000
Continua na próxima página	

Coordenada y	Valor y
431	-90.870047
432	5.490000
433	-90.310047
434	5.700000
435	-89.040047
436	6.200000
437	-90.250047
438	5.730000
439	-91.490047
440	5.250000
441	-92.080047
442	5.020000
443	-91.440047
444	5.270000
445	-90.720047
446	5.550000
447	-90.150047
448	5.770000
449	-89.540047
450	6.000000
451	-88.950047
452	6.230000
453	-88.480047
454	6.410000
455	-88.340047
456	6.460000
457	-89.680047
458	5.950000
459	-89.680047
460	5.950000
461	-89.070047
462	6.180000
463	-88.430047
464	6.430000
465	-89.070047
466	6.180000
467	-89.030047
468	6.200000
469	-88.500047
470	6.400000
471	-88.480047
472	6.410000
473	-87.950047
474	6.610000
475	-88.370047
476	6.450000
477	-98.380047
478	9.300000
479	-80.940047

Continúa na próxima página

Coordenada y	Valor y
480	9.290000
481	-80.390047
482	9.500000
483	-79.820047
484	9.720000
485	-99.030047
486	9.950000
487	-85.480047
488	7.550000
489	-86.610047
490	7.110000
491	-87.190047
492	6.890000
493	-87.880047
494	6.620000
495	-84.910047
496	7.770000
497	-84.330047
498	7.990000
499	-83.740047
500	8.220000
501	-83.200047
502	-0.000000
503	-97.320047
504	8.240000
505	-84.010047
506	8.140000
507	-84.650047
508	7.890000
509	-82.910047
510	-0.000000
511	-84.310047
512	8.010000
513	-85.230047
514	7.670000
515	-84.680047
516	7.880000
517	-84.060047
518	8.120000
519	-85.400047
520	7.600000
521	-87.110047
522	6.940000
523	-86.560047
524	7.150000
525	-85.970047
526	7.380000
527	-87.420047
528	-0.000000
Continua na próxima página	

Coordenada y	Valor y
529	-87.380047
530	6.830000
531	-87.950047
532	6.610000
533	-87.960047
534	6.190000
535	-88.470047
536	6.390000
537	-87.880047
538	6.620000
539	-88.520047
540	6.370000
541	-87.780047
542	6.680000
543	-87.140047
544	6.920000
545	-86.900047
546	7.010000
547	-87.530047
548	6.770000
549	-0.000000
550	-14.612885
551	-12.942885
552	-0.000000
553	-9.763255
554	-8.883255
555	-9.173255
556	-9.162885
557	-10.232885
558	-0.000000
559	-10.982885
560	-0.000000
561	-4.802885
562	-0.000000
563	-8.092885
564	-0.000000
565	-2.643255
566	-1.533255
567	-0.000000
568	-12.274953
569	-0.000000
570	-11.402885
571	-10.622885
572	-4.022885
573	-8.952885
574	-0.000000
575	-0.000000
576	-2.653255
577	-0.000000
Continua na próxima página	

Coordenada y	Valor y
578	-0.000000
579	-0.000000
580	-4.382885
581	-7.402885
582	-0.000000
583	-6.022885
584	-5.443255
585	-5.782885
586	-3.923255
587	-0.000000
588	-0.703255
589	-1.263255
590	-0.000000
591	-0.000000
592	-4.582885
593	-3.813255
594	-5.362885
595	-3.193255
596	-5.583255
597	-4.933255
598	-0.000000
599	-4.112885
600	-4.352885
601	-5.662885
602	-3.173255
603	-0.000000
604	-11.323255
605	-0.000000
606	-0.000000
607	-0.000000
608	-1.423255
609	-2.262885
610	-5.383255
611	-3.022885
612	-3.452885
613	-1.023255
614	-3.673255
615	-5.633255
616	-5.303255

4 Observações

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