

Solução do Problema ship04 - Solver HiGHS

Análise Computacional

17 de setembro de 2025

1 Informações do Problema

Informações do Problema:

- Nome: ship04
- Número de Variáveis: 2118
- Número de Restrições: 402
- Inviabilidade Primal: 0.000e+00
- Inviabilidade Dual: 0.000e+00
- Valor Primal: 1.793e+06
- Valor Dual: 1.793e+06
- Gap: 7.240e-23
- Número de Iterações: 16

2 Variáveis Primais e Custos Reduzidos

Tabela 1: Variáveis primais e custos reduzidos do problema ship04

Coordenada x	Valor x	Coordenada z	Valor z
1	187.378927	1	0.000000
2	28.642675	2	0.000000
3	34.631434	3	0.000000
4	11.157328	4	0.000000
5	49.889449	5	0.000000
6	27.700015	6	0.000000
7	44.000024	7	0.000000
8	0.000000	8	1470.424000
9	0.000000	9	1470.424000
10	0.000000	10	2554.000000
11	0.000000	11	2554.000000
12	0.000000	12	1109.000000

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Coordenada x	Valor x	Coordenada z	Valor z
13	0.000000	13	903.000000
14	0.000000	14	1109.000000
15	0.000000	15	642.546000
16	0.000000	16	672.134000
17	0.000000	17	400.432000
18	0.000000	18	853.582000
19	0.000000	19	523.788000
20	0.000000	20	509.076000
21	0.000000	21	534.700000
22	0.000000	22	881.188000
23	0.000000	23	733.312000
24	0.000000	24	1309.062000
25	0.000000	25	670.316000
26	0.000000	26	810.080000
27	-0.000000	27	0.000000
28	0.000000	28	443.178000
29	0.000000	29	178.996000
30	0.000000	30	494.834000
31	0.000000	31	63.282000
32	0.000000	32	230.018000
33	0.000000	33	183.900000
34	0.000000	34	749.678000
35	0.000000	35	684.864000
36	0.000000	36	808.690000
37	0.000000	37	524.258000
38	0.000000	38	660.344000
39	0.000000	39	259.442000
40	-0.000000	40	0.000000
41	0.000000	41	464.020000
42	0.000000	42	433.534000
43	0.000000	43	47.814000
44	0.000000	44	321.968000
45	0.000000	45	438.438000
46	0.000000	46	218.984000
47	4.865580	47	0.000000
48	0.000000	48	429.692000
49	0.000000	49	433.534000
50	0.000000	50	53.944000
51	0.000000	51	511.998000
52	0.000000	52	261.894000
53	0.000000	53	361.200000
54	0.000000	54	158.910000
55	17.458800	55	0.000000
56	0.000000	56	494.670000
57	0.000000	57	542.648000
58	0.000000	58	257.460000
59	0.000000	59	702.028000
60	0.000000	60	380.816000
61	0.000000	61	618.660000

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Coordenada x	Valor x	Coordenada z	Valor z
62	0.000000	62	382.042000
63	7.155260	63	0.000000
64	0.000000	64	542.484000
65	0.000000	65	508.320000
66	0.000000	66	251.330000
67	0.000000	67	589.236000
68	0.000000	68	375.912000
69	0.000000	69	366.104000
70	8.300100	70	0.000000
71	0.000000	71	462.794000
72	0.000000	72	453.150000
73	0.000000	73	170.414000
74	0.000000	74	570.846000
75	0.000000	75	431.082000
76	0.000000	76	286.414000
77	4.293160	77	0.000000
78	0.000000	78	53.310000
79	0.000000	79	407.788000
80	0.000000	80	166.736000
81	0.000000	81	616.208000
82	0.000000	82	226.340000
83	0.000000	83	288.866000
84	5.438000	84	0.000000
85	0.000000	85	639.338000
86	0.000000	86	590.462000
87	0.000000	87	69.882000
88	0.000000	88	735.130000
89	0.000000	89	363.652000
90	0.000000	90	212.854000
91	11.448400	91	0.000000
92	0.000000	92	470.150000
93	0.000000	93	487.478000
94	0.000000	94	166.736000
95	0.000000	95	666.474000
96	0.000000	96	323.194000
97	0.000000	97	288.866000
98	7.155260	98	0.000000
99	0.000000	99	493.444000
100	0.000000	100	482.574000
101	0.000000	101	99.306000
102	0.000000	102	704.480000
103	0.000000	103	309.708000
104	0.000000	104	198.142000
105	0.000000	105	14.120000
106	12.020800	106	0.000000
107	0.000000	107	345.896000
108	0.000000	108	255.642000
109	0.000000	109	577.610000
110	0.000000	110	126.442000

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Coordenada x	Valor x	Coordenada z	Valor z
111	0.000000	111	317.698000
112	6.869050	112	0.000000
113	0.000000	113	311.996000
114	0.000000	114	500.964000
115	0.000000	115	187.578000
116	0.000000	116	644.406000
117	0.000000	117	220.210000
118	0.000000	118	275.380000
119	0.000000	119	85.820000
120	0.000000	120	682.248000
121	0.000000	121	652.988000
122	2.003470	122	0.000000
123	0.000000	123	713.062000
124	0.000000	124	622.338000
125	0.000000	125	151.554000
126	5.151790	126	0.000000
127	0.000000	127	390.460000
128	0.000000	128	532.840000
129	0.000000	129	3.678000
130	0.000000	130	731.452000
131	0.000000	131	470.314000
132	0.000000	132	129.486000
133	0.000000	133	79.690000
134	0.000000	134	780.328000
135	0.000000	135	580.654000
136	11.448400	136	0.000000
137	0.000000	137	477.670000
138	0.000000	138	451.924000
139	0.000000	139	114.774000
140	0.000000	140	83.368000
141	0.000000	141	831.820000
142	0.000000	142	612.530000
143	2.003470	143	0.000000
144	0.000000	144	635.824000
145	0.000000	145	204.272000
146	0.000000	146	72.334000
147	0.000000	147	191.848000
148	0.000000	148	541.422000
149	6.010420	149	0.000000
150	0.000000	150	699.576000
151	0.000000	151	188.334000
152	6.296630	152	0.000000
153	0.000000	153	567.004000
154	0.000000	154	478.896000
155	0.000000	155	0.000000
156	0.000000	156	362.426000
157	0.000000	157	329.324000
158	0.000000	158	84.124000
159	0.000000	159	52.718000

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Coordenada x	Valor x	Coordenada z	Valor z
160	0.000000	160	591.524000
161	0.000000	161	534.066000
162	8.300100	162	0.000000
163	0.000000	163	416.370000
164	0.000000	164	154.006000
165	0.000000	165	18.390000
166	0.000000	166	229.854000
167	0.000000	167	586.784000
168	1.717260	168	0.000000
169	0.000000	169	684.864000
170	0.000000	170	291.318000
171	0.000000	171	135.616000
172	0.000000	172	39.232000
173	0.000000	173	390.460000
174	0.000000	174	449.472000
175	1.144840	175	0.000000
176	0.000000	176	594.140000
177	0.000000	177	74.316000
178	3.148320	178	0.000000
179	0.000000	179	223.724000
180	0.000000	180	483.800000
181	0.000000	181	153.250000
182	0.000000	182	623.564000
183	0.000000	183	294.996000
184	0.000000	184	239.826000
185	1.717260	185	0.000000
186	0.000000	186	562.100000
187	0.000000	187	481.348000
188	0.000000	188	93.176000
189	0.000000	189	274.154000
190	0.000000	190	275.380000
191	0.000000	191	193.238000
192	0.000000	192	231.244000
193	5.921543	193	0.000000
194	0.000000	194	457.890000
195	0.000000	195	438.438000
196	0.947507	196	0.000000
197	0.000000	197	700.802000
198	0.000000	198	299.900000
199	0.000000	199	120.904000
200	0.000000	200	169.188000
201	0.000000	201	294.832000
202	0.000000	202	655.440000
203	1.431050	203	0.000000
204	0.000000	204	591.688000
205	0.000000	205	283.962000
206	2.862110	206	0.000000
207	0.000000	207	456.664000
208	0.000000	208	415.144000

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Coordenada x	Valor x	Coordenada z	Valor z
209	0.000000	209	203.516000
210	0.000000	210	687.316000
211	0.000000	211	254.538000
212	0.000000	212	355.070000
213	0.000000	213	144.668000
214	0.000000	214	526.546000
215	0.000000	215	713.062000
216	1.431050	216	0.000000
217	0.000000	217	705.706000
218	0.000000	218	216.532000
219	0.000000	219	29.424000
220	0.000000	220	77.830000
221	0.000000	221	507.094000
222	2.862110	222	0.000000
223	0.000000	223	645.632000
224	0.000000	224	109.870000
225	0.000000	225	185.126000
226	0.000000	226	677.344000
227	0.000000	227	744.938000
228	2.003470	228	0.000000
229	0.000000	229	699.576000
230	0.000000	230	252.086000
231	0.000000	231	386.190000
232	0.000000	232	528.998000
233	0.000000	233	699.576000
234	0.858631	234	0.000000
235	0.000000	235	796.430000
236	0.000000	236	326.872000
237	1.717260	237	0.000000
238	0.000000	238	460.342000
239	0.000000	239	294.996000
240	0.000000	240	231.714000
241	0.000000	241	619.886000
242	0.000000	242	136.842000
243	0.000000	243	359.974000
244	4.579370	244	0.000000
245	0.000000	245	468.924000
246	0.000000	246	497.286000
247	0.000000	247	289.336000
248	0.000000	248	557.360000
249	0.000000	249	378.364000
250	0.000000	250	413.918000
251	5.724210	251	0.000000
252	0.000000	252	294.832000
253	0.000000	253	366.104000
254	0.000000	254	240.296000
255	0.000000	255	621.112000
256	0.000000	256	134.390000
257	0.000000	257	458.054000

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Coordenada x	Valor x	Coordenada z	Valor z
258	0.000000	258	341.584000
259	7.727680	259	0.000000
260	0.000000	260	418.658000
261	0.000000	261	453.150000
262	0.000000	262	175.318000
263	0.000000	263	813.594000
264	0.000000	264	344.036000
265	0.000000	265	264.346000
266	1.144840	266	0.000000
267	0.000000	267	423.562000
268	0.000000	268	340.358000
269	0.000000	269	191.256000
270	0.000000	270	515.676000
271	0.000000	271	211.628000
272	0.000000	272	351.392000
273	4.293160	273	0.000000
274	0.000000	274	289.928000
275	0.000000	275	359.974000
276	0.000000	276	186.352000
277	0.000000	277	657.892000
278	0.000000	278	135.616000
279	0.000000	279	344.036000
280	9.731160	280	0.000000
281	0.000000	281	559.648000
282	0.000000	282	502.190000
283	0.000000	283	158.154000
284	0.000000	284	779.266000
285	0.000000	285	340.358000
286	0.000000	286	293.770000
287	5.151790	287	0.000000
288	0.000000	288	451.760000
289	0.000000	289	252.086000
290	0.000000	290	197.386000
291	0.000000	291	568.394000
292	0.000000	292	180.978000
293	0.000000	293	460.506000
294	0.000000	294	355.070000
295	2.575890	295	0.000000
296	0.000000	296	432.144000
297	0.000000	297	378.364000
298	0.000000	298	217.002000
299	0.000000	299	632.146000
300	0.000000	300	167.492000
301	0.000000	301	388.172000
302	3.434530	302	0.000000
303	0.000000	303	486.088000
304	0.000000	304	402.884000
305	0.000000	305	176.544000
306	0.000000	306	523.032000

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Coordenada x	Valor x	Coordenada z	Valor z
307	0.000000	307	276.606000
308	0.000000	308	390.624000
309	0.000000	309	380.816000
310	3.434530	310	0.000000
311	0.000000	311	196.752000
312	0.000000	312	386.946000
313	0.000000	313	277.076000
314	0.000000	314	673.830000
315	0.000000	315	268.024000
316	0.000000	316	466.636000
317	1.717260	317	0.000000
318	0.000000	318	484.862000
319	0.000000	319	476.444000
320	0.000000	320	230.488000
321	0.000000	321	597.818000
322	0.000000	322	296.222000
323	0.000000	323	382.042000
324	5.724210	324	0.000000
325	0.000000	325	461.568000
326	0.000000	326	467.862000
327	0.000000	327	194.934000
328	0.000000	328	633.372000
329	0.000000	329	277.832000
330	0.000000	330	340.358000
331	0.572421	331	0.000000
332	0.000000	332	230.018000
333	1.144840	333	0.000000
334	0.000000	334	617.270000
335	0.000000	335	422.500000
336	0.000000	336	181.448000
337	0.000000	337	439.664000
338	0.000000	338	232.470000
339	0.000000	339	420.048000
340	0.286211	340	0.000000
341	0.000000	341	190.786000
342	-0.000000	342	0.000000
343	0.000000	343	392.912000
344	0.000000	344	379.590000
345	0.000000	345	286.884000
346	0.000000	346	671.378000
347	0.000000	347	390.624000
348	1.717260	348	0.000000
349	0.000000	349	502.026000
350	0.000000	350	374.686000
351	0.000000	351	94.402000
352	0.000000	352	232.470000
353	0.000000	353	253.312000
354	0.000000	354	98.836000
355	0.000000	355	271.702000

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Coordenada x	Valor x	Coordenada z	Valor z
356	0.858631	356	0.000000
357	0.000000	357	481.184000
358	0.000000	358	455.602000
359	0.000000	359	223.132000
360	0.000000	360	481.348000
361	0.000000	361	275.380000
362	0.000000	362	483.800000
363	3.148320	363	0.000000
364	0.000000	364	408.850000
365	0.000000	365	420.048000
366	0.000000	366	49.040000
367	0.000000	367	294.996000
368	0.000000	368	268.024000
369	0.000000	369	150.328000
370	0.000000	370	237.374000
371	0.000000	371	1.226000
372	0.000000	372	395.364000
373	0.000000	373	313.386000
374	1.717260	374	0.000000
375	0.000000	375	136.842000
376	0.000000	376	192.012000
377	0.000000	377	32.632000
378	0.000000	378	178.526000
379	0.000000	379	3.678000
380	0.000000	380	483.636000
381	0.000000	381	455.602000
382	2.003470	382	0.000000
383	0.000000	383	336.680000
384	0.000000	384	328.098000
385	0.000000	385	225.114000
386	0.000000	386	184.656000
387	6.296630	387	0.000000
388	0.000000	388	440.726000
389	0.000000	389	396.754000
390	0.000000	390	89.498000
391	0.000000	391	112.322000
392	0.000000	392	292.544000
393	0.000000	393	82.898000
394	0.000000	394	168.718000
395	2.575890	395	0.000000
396	0.000000	396	520.416000
397	0.000000	397	455.602000
398	0.000000	398	76.012000
399	0.000000	399	389.398000
400	0.000000	400	364.878000
401	0.000000	401	236.148000
402	0.000000	402	277.832000
403	1.431050	403	0.000000
404	0.000000	404	516.738000

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Coordenada x	Valor x	Coordenada z	Valor z
405	0.000000	405	443.342000
406	0.000000	406	91.950000
407	0.000000	407	292.544000
408	0.000000	408	329.324000
409	0.000000	409	147.876000
410	0.000000	410	264.346000
411	1.717260	411	0.000000
412	0.000000	412	441.952000
413	0.000000	413	442.116000
414	0.000000	414	155.702000
415	0.000000	415	307.256000
416	0.000000	416	313.386000
417	0.000000	417	185.882000
418	0.000000	418	382.042000
419	-0.000000	419	0.000000
420	0.000000	420	563.326000
421	0.000000	421	445.794000
422	0.000000	422	197.386000
423	0.000000	423	274.154000
424	0.000000	424	397.980000
425	0.000000	425	280.284000
426	0.000000	426	24.520000
427	0.000000	427	33.694000
428	0.000000	428	530.388000
429	2.289680	429	0.000000
430	0.000000	430	682.412000
431	0.000000	431	221.436000
432	0.000000	432	206.602000
433	1.717260	433	0.000000
434	0.000000	434	645.040000
435	0.000000	435	231.122000
436	0.000000	436	837.522000
437	0.000000	437	424.360000
438	0.000000	438	74.194000
439	2.862110	439	0.000000
440	0.000000	440	573.932000
441	0.000000	441	142.850000
442	0.000000	442	740.668000
443	0.000000	443	332.410000
444	0.000000	444	75.420000
445	0.572421	445	0.000000
446	0.000000	446	450.106000
447	0.000000	447	237.252000
448	0.000000	448	953.996000
449	0.000000	449	485.660000
450	0.000000	450	227.444000
451	0.858631	451	0.000000
452	0.000000	452	608.260000
453	0.000000	453	358.626000

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Coordenada x	Valor x	Coordenada z	Valor z
454	0.000000	454	805.646000
455	0.000000	455	591.096000
456	4.865580	456	0.000000
457	0.000000	457	519.354000
458	0.000000	458	128.730000
459	0.000000	459	619.886000
460	0.000000	460	193.238000
461	0.000000	461	683.638000
462	0.000000	462	331.776000
463	1.144840	463	0.000000
464	0.000000	464	108.480000
465	0.000000	465	453.150000
466	0.000000	466	8.582000
467	0.000000	467	662.796000
468	0.000000	468	196.916000
469	2.003470	469	0.000000
470	0.000000	470	131.774000
471	0.000000	471	352.618000
472	0.000000	472	111.566000
473	0.000000	473	660.344000
474	0.000000	474	149.102000
475	0.000000	475	357.522000
476	0.000000	476	251.964000
477	1.144840	477	0.000000
478	0.000000	478	695.306000
479	0.000000	479	390.502000
480	0.000000	480	925.794000
481	0.000000	481	556.768000
482	0.000000	482	247.062000
483	0.572421	483	0.000000
484	0.000000	484	739.442000
485	0.000000	485	378.246000
486	0.000000	486	1032.452000
487	0.000000	487	496.694000
488	0.000000	488	950.316000
489	0.858631	489	0.000000
490	0.000000	490	87.638000
491	0.000000	491	344.036000
492	0.000000	492	235.392000
493	0.000000	493	652.988000
494	0.000000	494	154.006000
495	0.000000	495	603.948000
496	0.000000	496	37.414000
497	9.158740	497	0.000000
498	0.000000	498	485.660000
499	0.000000	499	25.154000
500	0.000000	500	637.684000
501	0.000000	501	114.182000
502	0.000000	502	228.670000

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Coordenada x	Valor x	Coordenada z	Valor z
503	3.148320	503	0.000000
504	0.000000	504	672.012000
505	0.000000	505	164.918000
506	0.000000	506	820.354000
507	0.000000	507	452.558000
508	0.000000	508	384.372000
509	0.572421	509	0.000000
510	0.000000	510	771.318000
511	0.000000	511	419.926000
512	0.000000	512	591.096000
513	0.286211	513	0.000000
514	0.000000	514	147.754000
515	2.003470	515	0.000000
516	0.000000	516	653.622000
517	0.000000	517	329.202000
518	0.000000	518	1287.462000
519	0.000000	519	611.938000
520	0.000000	520	115.244000
521	0.000000	521	698.186000
522	0.000000	522	648.084000
523	-0.000000	523	0.000000
524	0.000000	524	770.684000
525	0.000000	525	455.602000
526	3.720740	526	0.000000
527	0.000000	527	25.112000
528	0.000000	528	489.930000
529	0.000000	529	110.340000
530	0.000000	530	675.056000
531	0.000000	531	254.538000
532	0.000000	532	320.742000
533	0.000000	533	623.546000
534	0.000000	534	556.134000
535	0.000000	535	584.332000
536	0.000000	536	737.582000
537	0.000000	537	407.788000
538	0.000000	538	508.320000
539	0.000000	539	321.700000
540	0.000000	540	668.188000
541	0.000000	541	820.212000
542	0.000000	542	1096.062000
543	0.000000	543	457.316000
544	0.000000	544	712.324000
545	-0.000000	545	0.000000
546	0.000000	546	540.178000
547	0.000000	547	478.896000
548	0.000000	548	494.834000
549	0.000000	549	63.282000
550	0.000000	550	345.262000
551	-0.000000	551	0.000000

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Coordenada x	Valor x	Coordenada z	Valor z
552	0.000000	552	662.778000
553	0.000000	553	500.964000
554	0.000000	554	624.790000
555	0.000000	555	340.358000
556	0.000000	556	476.444000
557	0.000000	557	190.786000
558	-0.000000	558	0.000000
559	0.000000	559	561.020000
560	0.000000	560	433.534000
561	0.000000	561	347.714000
562	0.000000	562	321.968000
563	0.000000	563	438.438000
564	0.000000	564	334.228000
565	0.208159	565	0.000000
566	0.000000	566	526.692000
567	0.000000	567	433.534000
568	0.000000	568	353.844000
569	0.000000	569	511.998000
570	0.000000	570	261.894000
571	0.000000	571	361.200000
572	0.000000	572	274.154000
573	2.331380	573	0.000000
574	0.000000	574	591.670000
575	0.000000	575	542.648000
576	0.000000	576	557.360000
577	0.000000	577	702.028000
578	0.000000	578	380.816000
579	0.000000	579	618.660000
580	0.000000	580	497.286000
581	0.541213	581	0.000000
582	0.000000	582	639.484000
583	0.000000	583	508.320000
584	0.000000	584	551.230000
585	0.000000	585	589.236000
586	0.000000	586	375.912000
587	0.000000	587	481.348000
588	0.582845	588	0.000000
589	0.000000	589	559.794000
590	0.000000	590	453.150000
591	0.000000	591	470.314000
592	0.000000	592	570.846000
593	0.000000	593	431.082000
594	0.000000	594	401.658000
595	0.624477	595	0.000000
596	0.000000	596	150.310000
597	0.000000	597	407.788000
598	0.000000	598	466.636000
599	0.000000	599	616.208000
600	0.000000	600	226.340000

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Coordenada x	Valor x	Coordenada z	Valor z
601	0.000000	601	404.110000
602	0.208159	602	0.000000
603	0.000000	603	736.338000
604	0.000000	604	590.462000
605	0.000000	605	369.782000
606	0.000000	606	735.130000
607	0.000000	607	363.652000
608	0.000000	608	328.098000
609	1.082430	609	0.000000
610	0.000000	610	567.150000
611	0.000000	611	487.478000
612	0.000000	612	466.636000
613	0.000000	613	666.474000
614	0.000000	614	323.194000
615	0.000000	615	404.110000
616	0.374686	616	0.000000
617	0.000000	617	590.444000
618	0.000000	618	482.574000
619	0.000000	619	399.206000
620	0.000000	620	704.480000
621	0.000000	621	309.708000
622	0.000000	622	313.386000
623	5.079080	623	0.000000
624	0.000000	624	82.880000
625	0.000000	625	331.776000
626	0.000000	626	541.422000
627	0.000000	627	563.490000
628	0.000000	628	112.322000
629	0.000000	629	418.822000
630	0.083264	630	0.000000
631	0.000000	631	408.996000
632	0.000000	632	500.964000
633	0.000000	633	487.478000
634	0.000000	634	644.406000
635	0.000000	635	220.210000
636	0.000000	636	390.624000
637	0.000000	637	4737.702000
638	0.000000	638	5431.130000
639	0.000000	639	5304.870000
640	0.000000	640	4951.782000
641	0.000000	641	5364.944000
642	0.000000	642	5274.220000
643	0.000000	643	4918.680000
644	0.041632	644	0.000000
645	0.000000	645	487.460000
646	0.000000	646	532.840000
647	0.000000	647	303.578000
648	0.000000	648	731.452000
649	0.000000	649	470.314000

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Coordenada x	Valor x	Coordenada z	Valor z
650	0.000000	650	244.730000
651	0.083264	651	0.000000
652	0.000000	652	797.638000
653	0.000000	653	500.964000
654	0.000000	654	220.210000
655	0.000000	655	397.980000
656	0.000000	656	372.234000
657	0.000000	657	150.328000
658	0.000000	658	4803.906000
659	0.000000	659	5649.358000
660	0.000000	660	5333.068000
661	0.000000	661	5020.438000
662	0.000000	662	5356.362000
663	0.000000	663	5040.054000
664	0.249791	664	0.000000
665	0.000000	665	216.514000
666	0.000000	666	469.088000
667	0.000000	667	227.566000
668	0.000000	668	627.242000
669	0.000000	669	231.244000
670	0.000000	670	4856.624000
671	0.000000	671	5520.628000
672	0.000000	672	5335.520000
673	0.000000	673	5156.524000
674	0.000000	674	5219.050000
675	0.000000	675	5185.948000
676	0.000000	676	5055.992000
677	0.041632	677	0.000000
678	0.000000	678	635.806000
679	0.000000	679	481.348000
680	0.000000	680	247.182000
681	0.000000	681	363.652000
682	0.000000	682	216.532000
683	0.000000	683	5027.038000
684	0.000000	684	5335.502000
685	0.000000	685	5595.432000
686	0.000000	686	5308.548000
687	0.000000	687	5693.512000
688	0.000000	688	5299.966000
689	0.000000	689	5259.508000
690	0.000000	690	4952.252000
691	0.000000	691	5400.480000
692	0.000000	692	5362.492000
693	0.000000	693	5212.920000
694	0.000000	694	5507.160000
695	0.000000	695	5102.580000
696	0.333054	696	0.000000
697	0.000000	697	320.724000
698	0.000000	698	483.800000

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Coordenada x	Valor x	Coordenada z	Valor z
699	0.000000	699	453.150000
700	0.000000	700	623.564000
701	0.000000	701	294.996000
702	0.000000	702	355.070000
703	0.000000	703	4850.494000
704	0.000000	704	5509.594000
705	0.000000	705	5331.842000
706	0.000000	706	5243.570000
707	0.000000	707	5124.648000
708	0.000000	708	5125.874000
709	0.000000	709	5043.732000
710	0.000000	710	5196.982000
711	0.041632	711	0.000000
712	0.000000	712	554.890000
713	0.000000	713	438.438000
714	0.000000	714	299.900000
715	0.000000	715	700.802000
716	0.000000	716	299.900000
717	0.000000	717	236.148000
718	0.000000	718	5123.892000
719	0.000000	719	5346.536000
720	0.000000	720	5610.144000
721	0.000000	721	5254.604000
722	0.000000	722	5546.392000
723	0.000000	723	5353.910000
724	0.249791	724	0.000000
725	0.000000	725	553.664000
726	0.000000	726	415.144000
727	0.000000	727	503.416000
728	0.000000	728	687.316000
729	0.000000	729	254.538000
730	0.000000	730	470.314000
731	0.000000	731	4919.150000
732	0.000000	732	5398.028000
733	0.000000	733	5487.544000
734	0.000000	734	5074.382000
735	0.000000	735	5480.188000
736	0.000000	736	5106.258000
737	0.083264	737	0.000000
738	0.000000	738	145.406000
739	0.000000	739	477.670000
740	0.000000	740	270.476000
741	0.000000	741	616.208000
742	0.000000	742	195.690000
743	0.000000	743	5025.812000
744	0.000000	744	5615.030000
745	0.000000	745	5585.624000
746	0.000000	746	5140.586000
747	0.000000	747	5540.262000

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Coordenada x	Valor x	Coordenada z	Valor z
748	0.000000	748	5208.016000
749	0.000000	749	5117.762000
750	0.000000	750	5357.570000
751	0.000000	751	5431.148000
752	0.000000	752	5031.472000
753	0.000000	753	5528.002000
754	0.000000	754	5173.688000
755	0.124895	755	0.000000
756	0.000000	756	557.342000
757	0.000000	757	294.996000
758	0.000000	758	531.614000
759	0.000000	759	619.886000
760	0.000000	760	136.842000
761	0.000000	761	475.218000
762	0.291423	762	0.000000
763	0.000000	763	565.924000
764	0.000000	764	497.286000
765	0.000000	765	589.236000
766	0.000000	766	557.360000
767	0.000000	767	378.364000
768	0.000000	768	529.162000
769	0.000000	769	4719.312000
770	0.000000	770	5111.144000
771	0.000000	771	5085.416000
772	0.000000	772	5259.508000
773	0.000000	773	5340.424000
774	0.000000	774	4853.702000
775	0.000000	775	5177.366000
776	0.000000	776	5176.140000
777	0.749372	777	0.000000
778	0.000000	778	515.658000
779	0.000000	779	453.150000
780	0.000000	780	475.218000
781	0.000000	781	813.594000
782	0.000000	782	344.036000
783	0.000000	783	379.590000
784	0.041632	784	0.000000
785	0.000000	785	520.562000
786	0.000000	786	340.358000
787	0.000000	787	491.156000
788	0.000000	788	515.676000
789	0.000000	789	211.628000
790	0.000000	790	466.636000
791	0.291423	791	0.000000
792	0.000000	792	386.928000
793	0.000000	793	359.974000
794	0.000000	794	486.252000
795	0.000000	795	657.892000
796	0.000000	796	135.616000

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Coordenada x	Valor x	Coordenada z	Valor z
797	0.000000	797	459.280000
798	0.999163	798	0.000000
799	0.000000	799	656.648000
800	0.000000	800	502.190000
801	0.000000	801	458.054000
802	0.000000	802	779.266000
803	0.000000	803	340.358000
804	0.000000	804	409.014000
805	0.457950	805	0.000000
806	0.000000	806	548.760000
807	0.000000	807	252.086000
808	0.000000	808	497.286000
809	0.000000	809	568.394000
810	0.000000	810	180.978000
811	0.000000	811	460.506000
812	0.000000	812	470.314000
813	0.124895	813	0.000000
814	0.000000	814	529.144000
815	0.000000	815	378.364000
816	0.000000	816	516.902000
817	0.000000	817	632.146000
818	0.000000	818	167.492000
819	0.000000	819	503.416000
820	0.166527	820	0.000000
821	0.000000	821	583.088000
822	0.000000	822	402.884000
823	0.000000	823	476.444000
824	0.000000	824	523.032000
825	0.000000	825	276.606000
826	0.000000	826	390.624000
827	0.000000	827	496.060000
828	0.915900	828	0.000000
829	0.000000	829	293.752000
830	0.000000	830	386.946000
831	0.000000	831	576.976000
832	0.000000	832	673.830000
833	0.000000	833	268.024000
834	0.000000	834	581.880000
835	0.124895	835	0.000000
836	0.000000	836	581.862000
837	0.000000	837	476.444000
838	0.000000	838	530.388000
839	0.000000	839	597.818000
840	0.000000	840	296.222000
841	0.000000	841	497.286000
842	0.291423	842	0.000000
843	0.000000	843	558.568000
844	0.000000	844	467.862000
845	0.000000	845	494.834000

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Coordenada x	Valor x	Coordenada z	Valor z
846	0.000000	846	633.372000
847	0.000000	847	277.832000
848	0.000000	848	455.602000
849	-0.000000	849	0.000000
850	0.000000	850	230.018000
851	0.000000	851	4848.042000
852	0.000000	852	5562.312000
853	0.000000	853	5270.542000
854	0.000000	854	5329.390000
855	0.000000	855	5287.706000
856	0.000000	856	5080.512000
857	0.000000	857	5383.334000
858	-0.000000	858	0.000000
859	0.000000	859	190.786000
860	-0.000000	860	0.000000
861	0.000000	861	489.912000
862	0.000000	862	379.590000
863	0.000000	863	586.784000
864	0.000000	864	671.378000
865	0.000000	865	505.868000
866	0.000000	866	4992.710000
867	0.000000	867	5591.736000
868	0.000000	868	5367.396000
869	0.000000	869	5387.012000
870	0.000000	870	5225.180000
871	0.000000	871	5246.022000
872	0.000000	872	5091.546000
873	0.000000	873	5379.656000
874	0.041632	874	0.000000
875	0.000000	875	578.184000
876	0.000000	876	455.602000
877	0.000000	877	523.032000
878	0.000000	878	481.348000
879	0.000000	879	275.380000
880	0.000000	880	599.044000
881	0.208159	881	0.000000
882	0.000000	882	505.850000
883	0.000000	883	420.048000
884	0.000000	884	348.940000
885	0.000000	885	294.996000
886	0.000000	886	268.024000
887	0.000000	887	150.328000
888	0.000000	888	352.618000
889	0.000000	889	5030.716000
890	0.000000	890	5521.854000
891	0.000000	891	5342.876000
892	0.000000	892	5329.390000
893	0.000000	893	5166.332000
894	0.000000	894	5221.502000

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Coordenada x	Valor x	Coordenada z	Valor z
895	0.000000	895	5062.122000
896	0.000000	896	5323.260000
897	0.000000	897	4872.562000
898	0.000000	898	5449.520000
899	0.000000	899	5324.486000
900	0.000000	900	5168.784000
901	0.000000	901	5205.564000
902	0.000000	902	5196.982000
903	0.000000	903	5093.998000
904	0.000000	904	5168.784000
905	0.000000	905	4913.020000
906	0.000000	906	5450.746000
907	0.000000	907	5309.774000
908	0.000000	908	5302.418000
909	0.000000	909	5025.342000
910	0.000000	910	5205.564000
911	0.000000	911	4995.918000
912	0.000000	912	5196.982000
913	0.208159	913	0.000000
914	0.000000	914	617.416000
915	0.000000	915	455.602000
916	0.000000	916	375.912000
917	0.000000	917	389.398000
918	0.000000	918	364.878000
919	0.000000	919	236.148000
920	0.000000	920	393.076000
921	0.000000	921	4872.562000
922	0.000000	922	5486.300000
923	0.000000	923	5315.904000
924	0.000000	924	5264.412000
925	0.000000	925	5165.106000
926	0.000000	926	5201.886000
927	0.000000	927	5020.438000
928	0.000000	928	5252.152000
929	0.041632	929	0.000000
930	0.000000	930	538.952000
931	0.000000	931	442.116000
932	0.000000	932	455.602000
933	0.000000	933	307.256000
934	0.000000	934	313.386000
935	0.000000	935	185.882000
936	0.000000	936	497.286000
937	-0.000000	937	0.000000
938	0.000000	938	660.326000
939	0.000000	939	445.794000
940	0.000000	940	497.286000
941	0.000000	941	274.154000
942	0.000000	942	397.980000
943	0.000000	943	395.528000

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Coordenada x	Valor x	Coordenada z	Valor z
944	0.333054	944	0.000000
945	0.000000	945	106.174000
946	0.000000	946	505.868000
947	0.000000	947	275.380000
948	0.000000	948	657.892000
949	0.000000	949	312.160000
950	0.000000	950	109.602000
951	1.165690	951	0.000000
952	0.000000	952	548.040000
953	0.000000	953	434.022000
954	0.000000	954	740.522000
955	0.000000	955	442.604000
956	0.707741	956	0.000000
957	0.000000	957	22.806000
958	0.000000	958	499.738000
959	0.000000	959	368.556000
960	0.000000	960	666.474000
961	0.000000	961	373.460000
962	1.498740	962	0.000000
963	0.000000	963	21.580000
964	0.000000	964	374.686000
965	0.000000	965	461.732000
966	0.000000	966	878.576000
967	0.000000	967	525.484000
968	0.000000	968	130.444000
969	1.457110	969	0.000000
970	0.000000	970	511.260000
971	0.000000	971	561.526000
972	0.000000	972	708.646000
973	0.000000	973	609.340000
974	2.997490	974	0.000000
975	0.000000	975	519.354000
976	0.000000	976	428.630000
977	0.000000	977	619.886000
978	0.000000	978	193.238000
979	0.000000	979	683.638000
980	0.000000	980	447.020000
981	0.333054	981	0.000000
982	0.000000	982	205.480000
983	0.000000	983	453.150000
984	0.000000	984	308.482000
985	0.000000	985	662.796000
986	0.000000	986	312.160000
987	2.164850	987	0.000000
988	0.000000	988	228.774000
989	0.000000	989	352.618000
990	0.000000	990	411.466000
991	0.000000	991	660.344000
992	0.000000	992	149.102000

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Coordenada x	Valor x	Coordenada z	Valor z
993	0.000000	993	472.766000
994	0.000000	994	154.964000
995	1.540380	995	0.000000
996	0.000000	996	598.306000
997	0.000000	997	593.402000
998	0.000000	998	828.794000
999	0.000000	999	575.012000
1000	0.000000	1000	150.062000
1001	0.333054	1001	0.000000
1002	0.000000	1002	642.442000
1003	0.000000	1003	581.146000
1004	0.000000	1004	935.452000
1005	0.000000	1005	399.694000
1006	0.000000	1006	853.316000
1007	1.290590	1007	0.000000
1008	0.000000	1008	184.638000
1009	0.000000	1009	344.036000
1010	0.000000	1010	535.292000
1011	0.000000	1011	652.988000
1012	0.000000	1012	154.006000
1013	0.000000	1013	719.192000
1014	1.165690	1014	0.000000
1015	0.000000	1015	59.586000
1016	0.000000	1016	448.246000
1017	0.000000	1017	287.640000
1018	0.000000	1018	600.270000
1019	0.000000	1019	192.012000
1020	0.000000	1020	131.670000
1021	0.915900	1021	0.000000
1022	0.000000	1022	575.012000
1023	0.000000	1023	367.818000
1024	0.000000	1024	723.354000
1025	0.000000	1025	470.802000
1026	0.000000	1026	287.372000
1027	1.540380	1027	0.000000
1028	0.000000	1028	674.318000
1029	0.000000	1029	622.826000
1030	0.000000	1030	609.340000
1031	0.000000	1031	5340.424000
1032	0.000000	1032	50.754000
1033	4.121550	1033	0.000000
1034	0.000000	1034	556.622000
1035	0.000000	1035	532.102000
1036	0.000000	1036	1190.462000
1037	0.000000	1037	630.182000
1038	-0.000000	1038	0.000000
1039	0.000000	1039	679.942000
1040	0.000000	1040	532.840000
1041	0.000000	1041	184.656000

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Coordenada x	Valor x	Coordenada z	Valor z
1042	0.000000	1042	655.440000
1043	0.000000	1043	340.358000
1044	0.791004	1044	0.000000
1045	0.000000	1045	122.112000
1046	0.000000	1046	489.930000
1047	0.000000	1047	410.240000
1048	0.000000	1048	675.056000
1049	0.000000	1049	254.538000
1050	0.000000	1050	435.986000
1051	0.000000	1051	496.826000
1052	0.000000	1052	228.898000
1053	-0.000000	1053	0.000000
1054	0.000000	1054	254.564000
1055	0.000000	1055	208.240000
1056	0.000000	1056	54.244000
1057	0.000000	1057	101.820000
1058	0.000000	1058	165.672000
1059	0.028824	1059	0.000000
1060	0.000000	1060	317.164000
1061	0.000000	1061	113.088000
1062	0.000000	1062	37.968000
1063	0.000000	1063	111.836000
1064	0.000000	1064	508.094000
1065	-0.000000	1065	0.000000
1066	0.000000	1066	184.452000
1067	0.000000	1067	86.170000
1068	0.000000	1068	24.822000
1069	0.000000	1069	297.132000
1070	0.000000	1070	755.990000
1071	0.000000	1071	439.860000
1072	0.000000	1072	436.104000
1073	0.000000	1073	412.942000
1074	0.000000	1074	340.544000
1075	0.000000	1075	131.242000
1076	0.000000	1076	178.818000
1077	0.000000	1077	585.718000
1078	0.000000	1078	287.116000
1079	-0.000000	1079	0.000000
1080	0.000000	1080	285.238000
1081	0.000000	1081	202.824000
1082	0.000000	1082	86.170000
1083	0.000000	1083	175.688000
1084	0.000000	1084	565.060000
1085	0.000000	1085	283.986000
1086	0.490010	1086	0.000000
1087	0.000000	1087	257.068000
1088	0.000000	1088	251.434000
1089	0.000000	1089	160.256000
1090	0.000000	1090	52.366000

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Coordenada x	Valor x	Coordenada z	Valor z
1091	0.000000	1091	71.772000
1092	0.000000	1092	494.322000
1093	0.000000	1093	235.784000
1094	2.997710	1094	0.000000
1095	0.000000	1095	250.182000
1096	0.000000	1096	208.240000
1097	0.000000	1097	187.800000
1098	0.000000	1098	62.382000
1099	0.000000	1099	74.902000
1100	0.000000	1100	521.866000
1101	0.000000	1101	221.386000
1102	1.239440	1102	0.000000
1103	0.000000	1103	195.720000
1104	0.000000	1104	208.866000
1105	0.000000	1105	57.374000
1106	0.000000	1106	116.218000
1107	0.000000	1107	522.492000
1108	0.000000	1108	234.532000
1109	0.576483	1109	0.000000
1110	0.000000	1110	227.646000
1111	0.000000	1111	136.468000
1112	0.000000	1112	58.000000
1113	0.000000	1113	118.096000
1114	0.000000	1114	315.286000
1115	0.000000	1115	213.248000
1116	0.201769	1116	0.000000
1117	0.000000	1117	252.686000
1118	0.000000	1118	175.688000
1119	0.000000	1119	61.130000
1120	0.000000	1120	167.550000
1121	0.000000	1121	663.968000
1122	0.000000	1122	355.976000
1123	0.230593	1123	0.000000
1124	0.000000	1124	362.862000
1125	0.000000	1125	295.254000
1126	0.000000	1126	71.772000
1127	0.000000	1127	118.096000
1128	0.000000	1128	528.126000
1129	0.000000	1129	253.938000
1130	1.498860	1130	0.000000
1131	0.000000	1131	278.352000
1132	0.000000	1132	225.142000
1133	0.000000	1133	61.130000
1134	0.000000	1134	152.526000
1135	0.000000	1135	574.450000
1136	0.000000	1136	285.864000
1137	0.778252	1137	0.000000
1138	0.000000	1138	332.188000
1139	0.000000	1139	252.686000

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Coordenada x	Valor x	Coordenada z	Valor z
1140	0.000000	1140	49.236000
1141	0.000000	1141	79.910000
1142	0.000000	1142	242.670000
1143	0.000000	1143	136.250000
1144	1.297090	1144	0.000000
1145	0.000000	1145	187.582000
1146	0.000000	1146	79.284000
1147	0.000000	1147	30.456000
1148	0.000000	1148	107.454000
1149	0.000000	1149	436.730000
1150	0.000000	1150	250.182000
1151	0.230593	1151	0.000000
1152	0.000000	1152	256.442000
1153	0.000000	1153	161.916000
1154	0.000000	1154	43.602000
1155	0.000000	1155	247.052000
1156	0.000000	1156	721.560000
1157	0.000000	1157	423.584000
1158	0.144121	1158	0.000000
1159	0.000000	1159	387.276000
1160	0.000000	1160	321.138000
1161	0.000000	1161	76.154000
1162	0.000000	1162	201.354000
1163	0.000000	1163	570.694000
1164	0.000000	1164	360.358000
1165	0.201769	1165	0.000000
1166	0.000000	1166	394.788000
1167	0.000000	1167	383.520000
1168	0.000000	1168	63.008000
1169	0.000000	1169	243.922000
1170	0.000000	1170	771.640000
1171	0.000000	1171	386.650000
1172	0.518834	1172	0.000000
1173	0.000000	1173	267.084000
1174	0.000000	1174	376.008000
1175	0.000000	1175	57.374000
1176	0.000000	1176	245.800000
1177	0.000000	1177	797.932000
1178	0.000000	1178	402.926000
1179	0.057648	1179	0.000000
1180	0.000000	1180	347.838000
1181	0.000000	1181	103.072000
1182	0.000000	1182	240.166000
1183	0.000000	1183	471.160000
1184	0.000000	1184	366.618000
1185	0.230593	1185	0.000000
1186	0.000000	1186	380.390000
1187	0.000000	1187	94.934000
1188	0.000000	1188	203.232000

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Coordenada x	Valor x	Coordenada z	Valor z
1189	0.000000	1189	662.716000
1190	0.000000	1190	334.692000
1191	1.095320	1191	0.000000
1192	0.000000	1192	208.240000
1193	0.000000	1193	313.408000
1194	0.000000	1194	41.724000
1195	0.000000	1195	230.150000
1196	0.000000	1196	675.236000
1197	0.000000	1197	362.862000
1198	0.691779	1198	0.000000
1199	0.000000	1199	235.784000
1200	0.000000	1200	77.406000
1201	0.000000	1201	212.622000
1202	0.000000	1202	490.566000
1203	0.000000	1203	389.780000
1204	0.028824	1204	0.000000
1205	0.000000	1205	372.878000
1206	0.000000	1206	294.002000
1207	0.000000	1207	68.016000
1208	0.000000	1208	2937.284000
1209	0.000000	1209	3286.592000
1210	0.000000	1210	3033.688000
1211	0.000000	1211	2714.020000
1212	0.000000	1212	3040.574000
1213	0.000000	1213	2750.736000
1214	0.000000	1214	124.982000
1215	0.000000	1215	409.186000
1216	0.000000	1216	258.946000
1217	0.201769	1217	0.000000
1218	0.000000	1218	263.328000
1219	0.000000	1219	217.630000
1220	0.000000	1220	42.976000
1221	0.000000	1221	155.656000
1222	0.000000	1222	612.636000
1223	0.000000	1223	288.368000
1224	0.086472	1224	0.000000
1225	0.000000	1225	115.592000
1226	0.000000	1226	238.288000
1227	0.000000	1227	54.462000
1228	0.000000	1228	69.268000
1229	0.000000	1229	203.232000
1230	0.000000	1230	607.002000
1231	0.000000	1231	314.034000
1232	0.345890	1232	0.000000
1233	0.000000	1233	381.016000
1234	0.000000	1234	298.384000
1235	0.000000	1235	60.504000
1236	0.000000	1236	3024.924000
1237	0.000000	1237	3259.048000

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Coordenada x	Valor x	Coordenada z	Valor z
1238	0.000000	1238	3160.140000
1239	0.000000	1239	2735.304000
1240	0.000000	1240	3060.606000
1241	0.000000	1241	2879.066000
1242	0.000000	1242	99.316000
1243	0.000000	1243	502.460000
1244	0.000000	1244	198.224000
1245	0.172945	1245	0.000000
1246	0.000000	1246	270.214000
1247	0.000000	1247	171.306000
1248	0.000000	1248	76.154000
1249	0.000000	1249	277.100000
1250	0.000000	1250	642.058000
1251	0.000000	1251	454.258000
1252	0.317065	1252	0.000000
1253	0.000000	1253	383.520000
1254	0.000000	1254	109.332000
1255	0.000000	1255	218.256000
1256	0.000000	1256	412.942000
1257	0.000000	1257	349.090000
1258	0.115297	1258	0.000000
1259	0.000000	1259	352.846000
1260	0.000000	1260	54.870000
1261	0.000000	1261	297.758000
1262	0.000000	1262	719.056000
1263	0.000000	1263	470.534000
1264	0.144121	1264	0.000000
1265	0.000000	1265	380.390000
1266	0.000000	1266	127.486000
1267	0.000000	1267	3021.794000
1268	0.000000	1268	3264.682000
1269	0.000000	1269	3068.744000
1270	0.000000	1270	2621.372000
1271	0.000000	1271	3051.216000
1272	0.000000	1272	2787.044000
1273	0.000000	1273	84.918000
1274	0.000000	1274	489.940000
1275	0.000000	1275	122.478000
1276	0.028824	1276	0.000000
1277	0.000000	1277	221.386000
1278	0.000000	1278	96.812000
1279	0.000000	1279	64.260000
1280	0.000000	1280	55.496000
1281	0.000000	1281	464.900000
1282	0.000000	1282	196.346000
1283	0.086472	1283	0.000000
1284	0.000000	1284	160.038000
1285	0.000000	1285	190.712000
1286	0.000000	1286	62.382000

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Coordenada x	Valor x	Coordenada z	Valor z
1287	0.000000	1287	80.536000
1288	0.000000	1288	401.048000
1289	0.000000	1289	154.404000
1290	0.518834	1290	0.000000
1291	0.000000	1291	217.630000
1292	0.000000	1292	91.178000
1293	0.000000	1293	114.558000
1294	0.000000	1294	50.488000
1295	0.000000	1295	113.714000
1296	0.000000	1296	497.452000
1297	0.000000	1297	232.028000
1298	0.778252	1298	0.000000
1299	0.000000	1299	349.090000
1300	0.000000	1300	231.402000
1301	0.000000	1301	44.228000
1302	0.000000	1302	105.576000
1303	0.000000	1303	491.818000
1304	0.000000	1304	166.298000
1305	0.086472	1305	0.000000
1306	0.000000	1306	188.834000
1307	0.000000	1307	155.656000
1308	0.000000	1308	80.536000
1309	0.000000	1309	108.080000
1310	0.000000	1310	426.088000
1311	0.000000	1311	178.818000
1312	0.201769	1312	0.000000
1313	0.000000	1313	263.954000
1314	0.000000	1314	119.348000
1315	0.000000	1315	79.284000
1316	0.000000	1316	122.478000
1317	0.000000	1317	578.206000
1318	0.000000	1318	265.832000
1319	1.297090	1319	0.000000
1320	0.000000	1320	340.326000
1321	0.000000	1321	238.288000
1322	0.000000	1322	68.016000
1323	0.000000	1323	102.446000
1324	0.000000	1324	503.086000
1325	0.000000	1325	118.096000
1326	0.201769	1326	0.000000
1327	0.000000	1327	212.622000
1328	0.000000	1328	136.876000
1329	0.000000	1329	137.720000
1330	0.000000	1330	79.284000
1331	0.000000	1331	92.430000
1332	0.000000	1332	483.054000
1333	0.000000	1333	172.558000
1334	0.086472	1334	0.000000
1335	0.000000	1335	235.158000

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Coordenada x	Valor x	Coordenada z	Valor z
1336	0.000000	1336	119.974000
1337	0.000000	1337	86.170000
1338	0.000000	1338	113.088000
1339	0.000000	1339	531.256000
1340	0.000000	1340	205.736000
1341	0.201769	1341	0.000000
1342	0.000000	1342	200.102000
1343	0.000000	1343	196.346000
1344	0.000000	1344	112.680000
1345	0.000000	1345	103.072000
1346	0.000000	1346	61.756000
1347	0.000000	1347	332.188000
1348	0.000000	1348	146.266000
1349	0.230593	1349	0.000000
1350	0.000000	1350	225.768000
1351	0.000000	1351	140.632000
1352	0.000000	1352	95.560000
1353	0.000000	1353	85.544000
1354	0.000000	1354	503.086000
1355	0.000000	1355	215.752000
1356	0.057648	1356	0.000000
1357	0.000000	1357	210.744000
1358	0.000000	1358	178.818000
1359	0.000000	1359	76.154000
1360	0.000000	1360	103.698000
1361	0.000000	1361	509.346000
1362	0.000000	1362	229.524000
1363	0.345890	1363	0.000000
1364	0.000000	1364	247.052000
1365	0.000000	1365	187.582000
1366	0.000000	1366	73.024000
1367	0.000000	1367	62.600000
1368	-0.000000	1368	0.000000
1369	0.000000	1369	2884.074000
1370	0.000000	1370	3369.224000
1371	0.000000	1371	2986.738000
1372	0.000000	1372	2773.490000
1373	0.000000	1373	2928.520000
1374	0.000000	1374	2802.912000
1375	0.000000	1375	2894.090000
1376	0.000000	1376	82.632000
1377	-0.000000	1377	0.000000
1378	0.000000	1378	56.748000
1379	0.000000	1379	427.340000
1380	0.000000	1380	137.502000
1381	0.490010	1381	0.000000
1382	0.000000	1382	219.508000
1383	0.000000	1383	51.740000
1384	0.000000	1384	2957.942000

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Coordenada x	Valor x	Coordenada z	Valor z
1385	0.000000	1385	3384.248000
1386	0.000000	1386	3036.192000
1387	0.000000	1387	2802.912000
1388	0.000000	1388	2896.594000
1389	0.000000	1389	3029.306000
1390	0.000000	1390	2808.546000
1391	0.000000	1391	2892.212000
1392	0.000000	1392	2849.018000
1393	0.000000	1393	3264.682000
1394	0.000000	1394	2968.584000
1395	0.000000	1395	2759.718000
1396	0.000000	1396	2914.748000
1397	0.000000	1397	2931.650000
1398	0.000000	1398	2891.586000
1399	0.000000	1399	178.192000
1400	0.000000	1400	556.922000
1401	0.000000	1401	279.604000
1402	0.518834	1402	0.000000
1403	0.000000	1403	148.770000
1404	0.000000	1404	257.068000
1405	0.000000	1405	55.088000
1406	0.000000	1406	94.934000
1407	0.000000	1407	2977.348000
1408	0.000000	1408	3348.566000
1409	0.000000	1409	3023.672000
1410	0.000000	1410	2773.490000
1411	0.000000	1411	2866.546000
1412	0.000000	1412	3016.786000
1413	0.000000	1413	2793.522000
1414	0.000000	1414	2863.416000
1415	0.000000	1415	205.110000
1416	0.000000	1416	620.148000
1417	0.000000	1417	322.798000
1418	0.057648	1418	0.000000
1419	0.000000	1419	195.094000
1420	0.000000	1420	312.782000
1421	0.000000	1421	118.314000
1422	0.000000	1422	93.056000
1423	0.000000	1423	157.534000
1424	0.000000	1424	552.540000
1425	0.000000	1425	247.052000
1426	0.403538	1426	0.000000
1427	0.000000	1427	34.838000
1428	0.000000	1428	248.930000
1429	-0.000000	1429	0.000000
1430	0.000000	1430	39.220000
1431	0.000000	1431	164.420000
1432	0.000000	1432	600.116000
1433	0.000000	1433	283.986000

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Coordenada x	Valor x	Coordenada z	Valor z
1434	0.115297	1434	0.000000
1435	0.000000	1435	183.200000
1436	0.000000	1436	292.750000
1437	0.000000	1437	85.136000
1438	0.000000	1438	101.820000
1439	0.000000	1439	2896.594000
1440	0.000000	1440	3330.412000
1441	0.000000	1441	3009.900000
1442	0.000000	1442	2740.312000
1443	0.000000	1443	2865.920000
1444	0.000000	1444	3006.770000
1445	0.000000	1445	2772.238000
1446	0.000000	1446	2827.108000
1447	0.000000	1447	2899.724000
1448	0.000000	1448	3295.356000
1449	0.000000	1449	3012.404000
1450	0.000000	1450	2775.994000
1451	0.000000	1451	2876.562000
1452	0.000000	1452	3001.762000
1453	0.000000	1453	2794.774000
1454	0.000000	1454	2890.334000
1455	0.000000	1455	198.632000
1456	0.000000	1456	656.238000
1457	0.000000	1457	313.190000
1458	0.000000	1458	96.186000
1459	0.000000	1459	158.568000
1460	0.000000	1460	343.864000
1461	0.000000	1461	137.284000
1462	0.000000	1462	215.752000
1463	0.000000	1463	390.406000
1464	0.000000	1464	360.984000
1465	0.230593	1465	0.000000
1466	0.000000	1466	371.626000
1467	0.000000	1467	111.836000
1468	0.000000	1468	190.712000
1469	0.000000	1469	255.190000
1470	0.000000	1470	301.514000
1471	0.461186	1471	0.000000
1472	0.000000	1472	332.814000
1473	0.000000	1473	97.438000
1474	0.000000	1474	168.176000
1475	0.000000	1475	300.262000
1476	0.000000	1476	310.278000
1477	0.230593	1477	0.000000
1478	0.000000	1478	328.432000
1479	0.000000	1479	95.560000
1480	0.000000	1480	120.600000
1481	0.000000	1481	252.060000
1482	0.000000	1482	198.850000

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Coordenada x	Valor x	Coordenada z	Valor z
1483	0.288241	1483	0.000000
1484	0.000000	1484	389.154000
1485	0.000000	1485	125.608000
1486	0.000000	1486	136.250000
1487	0.000000	1487	190.086000
1488	0.000000	1488	217.630000
1489	0.403538	1489	0.000000
1490	0.000000	1490	251.434000
1491	0.000000	1491	117.470000
1492	0.000000	1492	137.502000
1493	0.000000	1493	289.620000
1494	2.363580	1494	0.000000
1495	0.000000	1495	273.970000
1496	0.000000	1496	178.192000
1497	0.000000	1497	286.708000
1498	0.000000	1498	102.446000
1499	0.000000	1499	198.850000
1500	0.000000	1500	424.210000
1501	0.000000	1501	317.164000
1502	0.259417	1502	0.000000
1503	0.000000	1503	357.228000
1504	0.000000	1504	94.934000
1505	0.000000	1505	146.266000
1506	0.000000	1506	383.520000
1507	0.000000	1507	213.248000
1508	0.345890	1508	0.000000
1509	0.000000	1509	303.392000
1510	0.000000	1510	164.420000
1511	0.000000	1511	124.356000
1512	0.000000	1512	132.494000
1513	0.000000	1513	173.810000
1514	0.000000	1514	245.800000
1515	0.605307	1515	0.000000
1516	0.000000	1516	296.506000
1517	0.000000	1517	83.666000
1518	0.000000	1518	3289.096000
1519	0.000000	1519	3332.916000
1520	0.000000	1520	3427.442000
1521	0.000000	1521	3152.846000
1522	0.000000	1522	3510.074000
1523	0.000000	1523	3358.582000
1524	0.000000	1524	3448.318000
1525	0.000000	1525	83.040000
1526	0.000000	1526	297.758000
1527	0.000000	1527	145.640000
1528	0.201769	1528	0.000000
1529	0.000000	1529	236.410000
1530	0.000000	1530	103.698000
1531	0.000000	1531	186.956000

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Coordenada x	Valor x	Coordenada z	Valor z
1532	0.000000	1532	209.492000
1533	0.000000	1533	360.358000
1534	0.000000	1534	325.302000
1535	0.807076	1535	0.000000
1536	0.000000	1536	335.944000
1537	0.000000	1537	44.228000
1538	0.000000	1538	235.784000
1539	0.000000	1539	288.994000
1540	0.000000	1540	349.090000
1541	0.807076	1541	0.000000
1542	0.000000	1542	357.854000
1543	0.000000	1543	145.640000
1544	0.000000	1544	185.078000
1545	0.000000	1545	158.786000
1546	0.000000	1546	269.588000
1547	0.144121	1547	0.000000
1548	0.000000	1548	86.170000
1549	0.000000	1549	2779.124000
1550	0.000000	1550	110.584000
1551	0.000000	1551	205.110000
1552	0.000000	1552	255.816000
1553	0.634131	1553	0.000000
1554	0.000000	1554	512.476000
1555	0.000000	1555	143.136000
1556	0.000000	1556	262.076000
1557	0.000000	1557	729.698000
1558	0.000000	1558	421.080000
1559	-0.000000	1559	0.000000
1560	0.000000	1560	416.698000
1561	0.000000	1561	377.886000
1562	0.000000	1562	146.892000
1563	0.000000	1563	329.684000
1564	0.000000	1564	283.986000
1565	0.172945	1565	0.000000
1566	0.000000	1566	311.530000
1567	0.000000	1567	218.882000
1568	0.000000	1568	106.202000
1569	0.000000	1569	975.426000
1570	0.000000	1570	450.698000
1571	-0.000000	1571	0.000000
1572	0.000000	1572	500.964000
1573	0.000000	1573	410.240000
1574	0.000000	1574	108.644000
1575	0.000000	1575	201.820000
1576	0.000000	1576	326.872000
1577	0.092243	1577	0.000000
1578	0.000000	1578	623.564000
1579	0.000000	1579	223.888000
1580	0.000000	1580	76.768000

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Coordenada x	Valor x	Coordenada z	Valor z
1581	0.000000	1581	221.436000
1582	0.000000	1582	997.494000
1583	-0.000000	1583	0.000000
1584	0.000000	1584	363.652000
1585	0.000000	1585	171.170000
1586	0.000000	1586	51.022000
1587	0.000000	1587	584.332000
1588	0.000000	1588	1482.990000
1589	0.000000	1589	863.860000
1590	0.000000	1590	856.504000
1591	0.000000	1591	811.142000
1592	0.000000	1592	857.730000
1593	0.000000	1593	259.442000
1594	0.000000	1594	352.618000
1595	0.000000	1595	1149.518000
1596	0.000000	1596	564.716000
1597	0.737946	1597	0.000000
1598	0.000000	1598	561.038000
1599	0.000000	1599	588.010000
1600	0.000000	1600	171.170000
1601	0.000000	1601	346.488000
1602	0.000000	1602	1109.060000
1603	0.000000	1603	558.586000
1604	0.553459	1604	0.000000
1605	0.000000	1605	505.868000
1606	0.000000	1606	494.834000
1607	0.000000	1607	504.642000
1608	0.000000	1608	104.966000
1609	0.000000	1609	142.972000
1610	0.000000	1610	970.522000
1611	0.000000	1611	464.184000
1612	1.614260	1612	0.000000
1613	0.000000	1613	492.382000
1614	0.000000	1614	410.240000
1615	0.000000	1615	558.586000
1616	0.000000	1616	124.582000
1617	0.000000	1617	149.102000
1618	0.000000	1618	1024.466000
1619	0.000000	1619	435.986000
1620	0.415094	1620	0.000000
1621	0.000000	1621	385.720000
1622	0.000000	1622	411.466000
1623	0.000000	1623	114.774000
1624	0.000000	1624	230.018000
1625	0.000000	1625	1025.692000
1626	0.000000	1626	461.732000
1627	0.830189	1627	0.000000
1628	0.000000	1628	448.246000
1629	0.000000	1629	458.054000

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Coordenada x	Valor x	Coordenada z	Valor z
1630	0.000000	1630	116.000000
1631	0.000000	1631	233.696000
1632	0.000000	1632	619.886000
1633	0.000000	1633	420.048000
1634	0.461216	1634	0.000000
1635	0.000000	1635	497.286000
1636	0.000000	1636	346.488000
1637	0.000000	1637	122.130000
1638	0.000000	1638	330.550000
1639	0.000000	1639	1302.768000
1640	0.000000	1640	699.576000
1641	0.599581	1641	0.000000
1642	0.000000	1642	713.062000
1643	0.000000	1643	580.654000
1644	0.000000	1644	142.972000
1645	0.000000	1645	233.696000
1646	0.000000	1646	1036.726000
1647	0.000000	1647	499.738000
1648	1.014680	1648	0.000000
1649	0.000000	1649	547.552000
1650	0.000000	1650	443.342000
1651	0.000000	1651	122.130000
1652	0.000000	1652	301.126000
1653	0.000000	1653	1127.450000
1654	0.000000	1654	562.264000
1655	1.060800	1655	0.000000
1656	0.000000	1656	652.988000
1657	0.000000	1657	497.286000
1658	0.000000	1658	98.836000
1659	0.000000	1659	158.910000
1660	0.000000	1660	477.670000
1661	0.000000	1661	269.250000
1662	0.876310	1662	0.000000
1663	0.000000	1663	369.782000
1664	0.000000	1664	157.684000
1665	0.000000	1665	62.056000
1666	0.000000	1666	212.854000
1667	0.000000	1667	857.730000
1668	0.000000	1668	492.382000
1669	0.830189	1669	0.000000
1670	0.000000	1670	504.642000
1671	0.000000	1671	319.516000
1672	0.000000	1672	87.802000
1673	0.000000	1673	486.252000
1674	0.000000	1674	1415.560000
1675	0.000000	1675	831.984000
1676	0.138365	1676	0.000000
1677	0.000000	1677	760.876000
1678	0.000000	1678	819.724000

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Coordenada x	Valor x	Coordenada z	Valor z
1679	0.000000	1679	151.554000
1680	0.000000	1680	396.754000
1681	0.000000	1681	1120.094000
1682	0.000000	1682	708.158000
1683	0.368973	1683	0.000000
1684	0.000000	1684	775.588000
1685	0.000000	1685	753.520000
1686	0.000000	1686	125.808000
1687	0.000000	1687	480.122000
1688	0.000000	1688	1513.640000
1689	0.000000	1689	759.650000
1690	1.522010	1690	0.000000
1691	0.000000	1691	525.484000
1692	0.000000	1692	738.808000
1693	0.000000	1693	114.774000
1694	0.000000	1694	483.800000
1695	0.000000	1695	1565.132000
1696	0.000000	1696	791.526000
1697	0.461216	1697	0.000000
1698	0.000000	1698	683.638000
1699	0.000000	1699	204.272000
1700	0.000000	1700	472.766000
1701	0.000000	1701	925.160000
1702	0.000000	1702	720.418000
1703	0.645702	1703	0.000000
1704	0.000000	1704	747.390000
1705	0.000000	1705	188.334000
1706	0.000000	1706	400.432000
1707	0.000000	1707	1300.316000
1708	0.000000	1708	657.892000
1709	0.784067	1709	0.000000
1710	0.000000	1710	410.240000
1711	0.000000	1711	616.208000
1712	0.000000	1712	84.124000
1713	0.000000	1713	453.150000
1714	0.000000	1714	1324.836000
1715	0.000000	1715	713.062000
1716	1.060800	1716	0.000000
1717	0.000000	1717	464.184000
1718	0.000000	1718	154.006000
1719	0.000000	1719	418.822000
1720	0.000000	1720	963.166000
1721	0.000000	1721	765.780000
1722	0.046122	1722	0.000000
1723	0.000000	1723	732.678000
1724	0.000000	1724	578.202000
1725	0.000000	1725	135.616000
1726	0.000000	1726	439.664000
1727	0.000000	1727	1123.772000

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Coordenada x	Valor x	Coordenada z	Valor z
1728	0.000000	1728	628.468000
1729	0.184486	1729	0.000000
1730	0.000000	1730	641.954000
1731	0.000000	1731	74.316000
1732	0.000000	1732	247.182000
1733	0.000000	1733	803.786000
1734	0.000000	1734	509.546000
1735	0.368973	1735	0.000000
1736	0.000000	1736	518.128000
1737	0.000000	1737	428.630000
1738	0.000000	1738	86.576000
1739	0.000000	1739	307.256000
1740	0.000000	1740	1202.236000
1741	0.000000	1741	567.168000
1742	0.461216	1742	0.000000
1743	0.000000	1743	228.792000
1744	0.000000	1744	469.088000
1745	0.000000	1745	297.448000
1746	0.000000	1746	138.068000
1747	0.000000	1747	400.432000
1748	0.000000	1748	1191.202000
1749	0.000000	1749	617.434000
1750	0.691824	1750	0.000000
1751	0.000000	1751	748.616000
1752	0.000000	1752	586.784000
1753	0.000000	1753	120.904000
1754	0.000000	1754	569.620000
1755	0.000000	1755	1028.144000
1756	0.000000	1756	834.436000
1757	3.413000	1757	0.000000
1758	0.000000	1758	639.502000
1759	0.000000	1759	283.962000
1760	0.000000	1760	196.916000
1761	0.000000	1761	986.460000
1762	0.000000	1762	390.624000
1763	0.184486	1763	0.000000
1764	0.000000	1764	531.614000
1765	0.000000	1765	337.906000
1766	0.000000	1766	151.554000
1767	0.000000	1767	545.100000
1768	0.000000	1768	1259.858000
1769	0.000000	1769	892.058000
1770	0.276730	1770	0.000000
1771	0.000000	1771	753.520000
1772	0.000000	1772	216.532000
1773	0.000000	1773	429.856000
1774	0.000000	1774	811.142000
1775	0.000000	1775	686.090000
1776	0.322851	1776	0.000000

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Coordenada x	Valor x	Coordenada z	Valor z
1777	0.000000	1777	693.446000
1778	0.000000	1778	109.870000
1779	0.000000	1779	585.558000
1780	0.000000	1780	1410.656000
1781	0.000000	1781	923.934000
1782	0.553459	1782	0.000000
1783	0.000000	1783	747.390000
1784	0.000000	1784	252.086000
1785	0.000000	1785	786.622000
1786	0.000000	1786	1262.310000
1787	0.000000	1787	878.572000
1788	0.092243	1788	0.000000
1789	0.000000	1789	844.244000
1790	0.000000	1790	326.872000
1791	0.000000	1791	168.718000
1792	0.000000	1792	961.940000
1793	0.000000	1793	242.278000
1794	0.092243	1794	0.000000
1795	0.000000	1795	435.986000
1796	0.000000	1796	192.012000
1797	0.000000	1797	128.260000
1798	0.000000	1798	111.096000
1799	0.000000	1799	912.900000
1800	0.000000	1800	386.946000
1801	0.922432	1801	0.000000
1802	0.000000	1802	315.838000
1803	0.000000	1803	375.912000
1804	0.000000	1804	124.582000
1805	0.000000	1805	160.136000
1806	0.000000	1806	787.848000
1807	0.000000	1807	304.804000
1808	1.983230	1808	0.000000
1809	0.000000	1809	428.630000
1810	0.000000	1810	180.978000
1811	0.000000	1811	415.144000
1812	0.000000	1812	101.288000
1813	0.000000	1813	225.114000
1814	0.000000	1814	976.652000
1815	0.000000	1815	456.828000
1816	1.060800	1816	0.000000
1817	0.000000	1817	686.090000
1818	0.000000	1818	455.602000
1819	0.000000	1819	89.028000
1820	0.000000	1820	209.176000
1821	0.000000	1821	965.618000
1822	0.000000	1822	328.098000
1823	0.092243	1823	0.000000
1824	0.000000	1824	372.234000
1825	0.000000	1825	307.256000

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Coordenada x	Valor x	Coordenada z	Valor z
1826	0.000000	1826	160.136000
1827	0.000000	1827	214.080000
1828	0.000000	1828	836.888000
1829	0.000000	1829	352.618000
1830	0.322851	1830	0.000000
1831	0.000000	1831	519.354000
1832	0.000000	1832	236.148000
1833	0.000000	1833	157.684000
1834	0.000000	1834	242.278000
1835	0.000000	1835	1134.806000
1836	0.000000	1836	523.032000
1837	1.153040	1837	0.000000
1838	0.000000	1838	668.926000
1839	0.000000	1839	469.088000
1840	0.000000	1840	135.616000
1841	0.000000	1841	203.046000
1842	0.000000	1842	987.686000
1843	0.000000	1843	233.696000
1844	0.276730	1844	0.000000
1845	0.000000	1845	418.822000
1846	0.000000	1846	270.476000
1847	0.000000	1847	460.506000
1848	0.000000	1848	157.684000
1849	0.000000	1849	183.430000
1850	0.000000	1850	948.454000
1851	0.000000	1851	340.358000
1852	0.184486	1852	0.000000
1853	0.000000	1853	462.958000
1854	0.000000	1854	237.374000
1855	0.000000	1855	171.170000
1856	0.000000	1856	223.888000
1857	0.000000	1857	1042.856000
1858	0.000000	1858	405.336000
1859	0.968554	1859	0.000000
1860	0.000000	1860	394.302000
1861	0.000000	1861	386.946000
1862	0.000000	1862	411.466000
1863	0.000000	1863	204.272000
1864	0.000000	1864	123.356000
1865	0.000000	1865	652.988000
1866	0.000000	1866	288.866000
1867	0.092243	1867	0.000000
1868	0.000000	1868	444.568000
1869	0.000000	1869	277.832000
1870	0.000000	1870	189.560000
1871	0.000000	1871	169.944000
1872	0.000000	1872	987.686000
1873	0.000000	1873	424.952000
1874	0.046122	1874	0.000000

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Coordenada x	Valor x	Coordenada z	Valor z
1875	0.000000	1875	415.144000
1876	0.000000	1876	352.618000
1877	0.000000	1877	151.554000
1878	0.000000	1878	205.498000
1879	0.000000	1879	999.946000
1880	0.000000	1880	451.924000
1881	0.276730	1881	0.000000
1882	0.000000	1882	486.252000
1883	0.000000	1883	369.782000
1884	0.000000	1884	145.424000
1885	0.000000	1885	122.600000
1886	0.276730	1886	0.000000
1887	0.000000	1887	218.984000
1888	0.000000	1888	1169.134000
1889	0.000000	1889	420.048000
1890	0.507338	1890	0.000000
1891	0.000000	1891	306.030000
1892	0.000000	1892	248.408000
1893	0.000000	1893	238.600000
1894	0.000000	1894	161.832000
1895	0.461216	1895	0.000000
1896	0.000000	1896	113.548000
1897	0.000000	1897	839.340000
1898	0.000000	1898	271.702000
1899	-0.000000	1899	0.000000
1900	0.000000	1900	432.308000
1901	0.000000	1901	103.740000
1902	0.000000	1902	306.030000
1903	0.000000	1903	1140.936000
1904	0.000000	1904	459.280000
1905	1.660380	1905	0.000000
1906	0.000000	1906	185.882000
1907	0.000000	1907	445.794000
1908	0.000000	1908	201.820000
1909	0.000000	1909	177.300000
1910	0.000000	1910	177.300000
1911	0.000000	1911	991.364000
1912	0.000000	1912	411.466000
1913	0.276730	1913	0.000000
1914	0.000000	1914	306.030000
1915	0.000000	1915	339.132000
1916	0.000000	1916	260.668000
1917	0.000000	1917	351.392000
1918	0.000000	1918	1093.122000
1919	0.000000	1919	550.004000
1920	0.830189	1920	0.000000
1921	0.000000	1921	293.770000
1922	0.000000	1922	505.868000
1923	0.000000	1923	298.674000

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Coordenada x	Valor x	Coordenada z	Valor z
1924	0.000000	1924	188.334000
1925	0.000000	1925	401.658000
1926	0.000000	1926	1128.676000
1927	0.000000	1927	492.382000
1928	1.291400	1928	0.000000
1929	0.000000	1929	184.656000
1930	0.000000	1930	478.896000
1931	0.000000	1931	230.018000
1932	0.000000	1932	178.526000
1933	0.000000	1933	404.110000
1934	0.000000	1934	1216.948000
1935	0.000000	1935	634.598000
1936	0.415094	1936	0.000000
1937	0.000000	1937	384.494000
1938	0.000000	1938	614.982000
1939	0.000000	1939	422.500000
1940	0.000000	1940	184.656000
1941	0.000000	1941	310.934000
1942	0.000000	1942	1084.540000
1943	0.000000	1943	486.252000
1944	2.951780	1944	0.000000
1945	0.000000	1945	70.638000
1946	0.000000	1946	489.930000
1947	0.000000	1947	190.786000
1948	0.000000	1948	79.220000
1949	0.000000	1949	324.420000
1950	0.000000	1950	1177.716000
1951	0.000000	1951	558.586000
1952	0.230608	1952	0.000000
1953	0.000000	1953	361.200000
1954	0.000000	1954	575.750000
1955	0.000000	1955	357.522000
1956	0.000000	1956	201.820000
1957	0.000000	1957	308.482000
1958	0.000000	1958	1158.100000
1959	0.000000	1959	530.388000
1960	2.675050	1960	0.000000
1961	0.000000	1961	248.408000
1962	0.000000	1962	524.258000
1963	0.000000	1963	253.312000
1964	0.000000	1964	172.396000
1965	0.000000	1965	244.730000
1966	0.000000	1966	1019.562000
1967	0.000000	1967	465.410000
1968	0.737946	1968	0.000000
1969	0.000000	1969	199.368000
1970	0.000000	1970	444.568000
1971	0.000000	1971	227.566000
1972	0.000000	1972	226.340000

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Coordenada x	Valor x	Coordenada z	Valor z
1973	0.000000	1973	203.046000
1974	0.000000	1974	1099.252000
1975	0.000000	1975	427.404000
1976	-0.000000	1976	0.000000
1977	0.000000	1977	124.582000
1978	0.000000	1978	487.478000
1979	0.000000	1979	82.898000
1980	0.000000	1980	424.952000
1981	0.000000	1981	767.006000
1982	0.000000	1982	709.384000
1983	0.276730	1983	0.000000
1984	0.000000	1984	730.226000
1985	0.000000	1985	221.436000
1986	0.000000	1986	375.912000
1987	0.000000	1987	502.190000
1988	0.000000	1988	592.914000
1989	0.230608	1989	0.000000
1990	0.000000	1990	654.214000
1991	0.000000	1991	193.238000
1992	0.000000	1992	331.776000
1993	0.000000	1993	590.462000
1994	0.000000	1994	610.078000
1995	0.276730	1995	0.000000
1996	0.000000	1996	645.632000
1997	0.000000	1997	189.560000
1998	0.000000	1998	238.600000
1999	0.000000	1999	496.060000
2000	0.000000	2000	391.850000
2001	0.046122	2001	0.000000
2002	0.000000	2002	764.558000
2003	0.000000	2003	248.408000
2004	0.000000	2004	269.250000
2005	0.000000	2005	374.686000
2006	0.000000	2006	428.630000
2007	0.046122	2007	0.000000
2008	0.000000	2008	494.834000
2009	0.000000	2009	232.470000
2010	0.000000	2010	271.702000
2011	0.000000	2011	569.620000
2012	0.599581	2012	0.000000
2013	0.000000	2013	538.970000
2014	0.000000	2014	351.392000
2015	0.000000	2015	752.294000
2016	0.000000	2016	203.046000
2017	0.000000	2017	391.850000
2018	0.000000	2018	833.210000
2019	0.000000	2019	623.564000
2020	0.138365	2020	0.000000
2021	0.000000	2021	702.028000

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Coordenada x	Valor x	Coordenada z	Valor z
2022	0.000000	2022	188.334000
2023	0.000000	2023	288.866000
2024	0.000000	2024	753.520000
2025	0.000000	2025	420.048000
2026	0.138365	2026	0.000000
2027	0.000000	2027	596.592000
2028	0.000000	2028	324.420000
2029	0.000000	2029	245.956000
2030	0.000000	2030	261.894000
2031	0.000000	2031	342.810000
2032	0.000000	2032	483.800000
2033	0.138365	2033	0.000000
2034	0.000000	2034	583.106000
2035	0.000000	2035	166.266000
2036	0.000000	2036	269.248000
2037	0.000000	2037	355.066000
2038	0.000000	2038	540.192000
2039	0.046122	2039	0.000000
2040	0.000000	2040	702.020000
2041	0.000000	2041	405.332000
2042	0.000000	2042	769.456000
2043	0.000000	2043	165.040000
2044	0.000000	2044	585.558000
2045	0.000000	2045	287.640000
2046	0.046122	2046	0.000000
2047	0.000000	2047	465.410000
2048	0.000000	2048	205.498000
2049	0.000000	2049	368.556000
2050	0.000000	2050	412.692000
2051	0.000000	2051	708.158000
2052	0.000000	2052	639.502000
2053	1.014680	2053	0.000000
2054	0.000000	2054	660.344000
2055	0.000000	2055	89.028000
2056	0.000000	2056	464.184000
2057	0.000000	2057	568.394000
2058	0.000000	2058	686.090000
2059	0.461216	2059	0.000000
2060	0.000000	2060	703.250000
2061	0.000000	2061	287.640000
2062	0.000000	2062	364.878000
2063	0.000000	2063	313.386000
2064	0.000000	2064	530.388000
2065	0.046122	2065	0.000000
2066	0.000000	2066	171.170000
2067	0.092243	2067	0.000000
2068	0.000000	2068	218.984000
2069	0.000000	2069	404.110000
2070	0.000000	2070	503.416000

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Coordenada x	Valor x	Coordenada z	Valor z
2071	0.138365	2071	0.000000
2072	0.000000	2072	1006.074000
2073	0.000000	2073	282.736000
2074	0.000000	2074	515.676000
2075	0.000000	2075	1431.498000
2076	0.000000	2076	827.080000
2077	-0.000000	2077	0.000000
2078	0.000000	2078	818.498000
2079	0.000000	2079	742.486000
2080	0.000000	2080	290.092000
2081	0.000000	2081	648.084000
2082	0.000000	2082	558.586000
2083	0.230608	2083	0.000000
2084	0.000000	2084	612.530000
2085	0.000000	2085	431.082000
2086	0.000000	2086	210.402000
2087	-0.000000	2087	0.000000
2088	0.000000	2088	116.000000
2089	-0.000000	2089	0.000000
2090	-0.000000	2090	0.000000
2091	-0.000000	2091	0.000000
2092	0.000000	2092	116.000000
2093	-0.000000	2093	0.000000
2094	-0.000000	2094	0.000000
2095	-0.000000	2095	0.000000
2096	-0.000000	2096	0.000000
2097	-0.000000	2097	0.000000
2098	-0.000000	2098	0.000000
2099	0.000000	2099	116.000000
2100	-0.000000	2100	0.000000
2101	0.000000	2101	58.000000
2102	0.000000	2102	116.000000
2103	-0.000000	2103	0.000000
2104	-0.000000	2104	0.000000
2105	-0.000000	2105	0.000000
2106	0.737946	2106	0.000000
2107	-0.000000	2107	0.000000
2108	-0.000000	2108	0.000000
2109	-0.000000	2109	0.000000
2110	-0.000000	2110	0.000000
2111	-0.000000	2111	0.000000
2112	-0.000000	2112	0.000000
2113	-0.000000	2113	0.000000
2114	-0.000000	2114	0.000000
2115	-0.000000	2115	0.000000
2116	-0.000000	2116	0.000000
2117	-0.000000	2117	0.000000
2118	-0.000000	2118	0.000000

3 Variáveis Duais (Multiplicadores de Lagrange)

Tabela 2: Variáveis duais do problema ship04

Coordenada y	Valor y
1	-0.000000
2	-0.000000
3	-0.000000
4	-0.000000
5	-0.000000
6	-0.000000
7	-0.000000
8	-0.000000
9	-0.000000
10	-0.000000
11	-0.000000
12	-0.000000
13	-3425.814581
14	-0.000000
15	-0.000000
16	-0.000000
17	-0.000000
18	-0.000000
19	-0.000000
20	-0.000000
21	-0.000000
22	-0.000000
23	-0.000000
24	-0.000000
25	-0.000000
26	-0.000000
27	-116.000000
28	-116.000000
29	-116.000000
30	-0.000000
31	-116.000000
32	-116.000000
33	-116.000000
34	-116.000000
35	-0.000000
36	-0.000000
37	-116.000000
38	-116.000000
39	-116.000000
40	-116.000000
41	-116.000000
42	-116.000000
43	-58.000000
44	-58.000000

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Coordenada y	Valor y
45	-58.000000
46	-0.000000
47	-58.000000
48	-58.000000
49	-58.000000
50	-58.000000
51	-116.000000
52	-116.000000
53	-116.000000
54	-0.000000
55	-116.000000
56	-116.000000
57	-116.000000
58	-116.000000
59	4434.576000
60	4597.000000
61	4850.946000
62	4580.000000
63	4881.596000
64	4794.550000
65	4576.322000
66	4631.492000
67	4719.764000
68	4853.398000
69	4680.532000
70	4658.464000
71	-0.000000
72	4724.668000
73	4907.934000
74	4744.284000
75	4649.882000
76	4765.126000
77	4774.934000
78	4718.538000
79	4972.320000
80	4854.624000
81	4784.742000
82	-0.000000
83	5006.648000
84	4911.020000
85	4837.460000
86	4848.494000
87	4823.974000
88	4952.704000
89	4686.662000
90	4772.482000
91	5125.570000
92	4838.686000
93	4729.572000

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Coordenada y	Valor y
94	4801.906000
95	4663.368000
96	4717.312000
97	4709.956000
98	4752.866000
99	4790.872000
100	4660.916000
101	4745.510000
102	4745.510000
103	4761.448000
104	4850.946000
105	4685.436000
106	4667.046000
107	4953.930000
108	4846.042000
109	4957.608000
110	4687.888000
111	4990.710000
112	4777.386000
113	4891.404000
114	5027.490000
115	4866.884000
116	4911.020000
117	4803.132000
118	4870.562000
119	-0.000000
120	-0.000000
121	4876.692000
122	4794.550000
123	5055.688000
124	5030.534000
125	4997.432000
126	5203.400000
127	4983.946000
128	-0.000000
129	5090.016000
130	5270.238000
131	5028.716000
132	4970.460000
133	5392.204000
134	5116.988000
135	5046.472000
136	5254.892000
137	5042.794000
138	5038.524000
139	-0.000000
140	5116.354000
141	4652.334000
142	4923.280000

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Coordenada y	Valor y
143	-0.000000
144	-0.000000
145	4552.576000
146	4812.000000
147	4852.946000
148	4765.900000
149	4883.596000
150	4796.550000
151	4578.322000
152	4633.492000
153	4721.764000
154	4855.398000
155	4682.532000
156	4660.464000
157	-0.000000
158	4726.668000
159	4924.054000
160	4746.284000
161	-0.000000
162	4767.126000
163	4856.624000
164	-0.000000
165	5046.654000
166	-0.000000
167	4839.460000
168	-0.000000
169	-0.000000
170	-0.000000
171	4839.460000
172	-0.000000
173	4825.974000
174	-0.000000
175	4688.662000
176	-0.000000
177	5156.994000
178	-0.000000
179	-0.000000
180	4803.906000
181	4665.368000
182	-0.000000
183	4711.956000
184	4754.866000
185	4792.872000
186	4662.916000
187	4747.510000
188	4747.510000
189	4763.448000
190	4852.946000
191	4687.436000

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Coordenada y	Valor y
192	4669.046000
193	4955.930000
194	-0.000000
195	4959.608000
196	4689.888000
197	-0.000000
198	4779.386000
199	4893.404000
200	-0.000000
201	-0.000000
202	-0.000000
203	4805.132000
204	-0.000000
205	-0.000000
206	-0.000000
207	4878.692000
208	4796.550000
209	5082.208000
210	5129.534000
211	5073.626000
212	5280.820000
213	5082.946000
214	-0.000000
215	5092.016000
216	5272.238000
217	5030.716000
218	5069.460000
219	5491.204000
220	5118.988000
221	5085.886000
222	5353.892000
223	5141.794000
224	-0.000000
225	-0.000000
226	5215.354000
227	4769.578000
228	4925.280000
229	-0.000000
230	-0.000000
231	2675.208000
232	2928.112000
233	2774.742000
234	2545.000000
235	2723.410000
236	2682.094000
237	2674.582000
238	2699.622000
239	2703.378000
240	2769.734000

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Coordenada y	Valor y
241	2632.014000
242	2670.200000
243	-0.000000
244	2669.574000
245	2842.976000
246	2724.662000
247	2580.682000
248	2641.404000
249	2644.534000
250	2615.738000
251	2745.320000
252	2685.224000
253	2649.542000
254	-0.000000
255	2762.848000
256	-0.000000
257	2754.710000
258	2729.670000
259	2669.574000
260	-0.000000
261	2703.378000
262	2643.282000
263	2823.570000
264	2677.086000
265	-0.000000
266	2776.620000
267	2735.304000
268	2737.808000
269	2700.874000
270	2730.922000
271	2747.824000
272	2667.070000
273	2730.296000
274	2740.312000
275	2727.792000
276	2824.822000
277	2716.524000
278	2688.980000
279	2876.562000
280	-0.000000
281	2858.408000
282	2746.572000
283	-0.000000
284	-0.000000
285	2729.044000
286	-0.000000
287	2691.484000
288	2759.718000
289	2697.744000

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Coordenada y	Valor y
290	-0.000000
291	-0.000000
292	-0.000000
293	-0.000000
294	2659.150000
295	2787.888000
296	2893.056000
297	2831.082000
298	2984.452000
299	2934.372000
300	-0.000000
301	2871.146000
302	2901.820000
303	2831.082000
304	2943.762000
305	-0.000000
306	2939.380000
307	2796.026000
308	2973.810000
309	2995.720000
310	-0.000000
311	-0.000000
312	2986.956000
313	2581.934000
314	2776.620000
315	-0.000000
316	-0.000000
317	4926.008000
318	5421.312000
319	5120.942000
320	4671.000000
321	5020.410000
322	4939.494000
323	4924.782000
324	4973.822000
325	4981.178000
326	5111.134000
327	4841.414000
328	4916.200000
329	-0.000000
330	4914.974000
331	5254.576000
332	5022.862000
333	4740.882000
334	4859.804000
335	4865.934000
336	4809.538000
337	5063.320000
338	4945.624000

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Coordenada y	Valor y
339	4875.742000
340	-0.000000
341	5097.648000
342	5002.020000
343	5081.710000
344	5032.670000
345	4914.974000
346	5043.704000
347	4981.178000
348	4863.482000
349	5216.570000
350	4929.686000
351	4820.572000
352	5124.620000
353	5043.704000
354	5048.608000
355	4976.274000
356	5035.122000
357	5068.224000
358	4910.070000
359	5033.896000
360	5053.512000
361	5028.992000
362	5219.022000
363	5006.924000
364	4952.980000
365	5322.762000
366	5118.490000
367	5287.208000
368	5065.772000
369	5176.112000
370	5091.518000
371	5031.444000
372	5118.490000
373	4957.884000
374	5091.518000
375	4970.144000
376	5053.512000
377	-0.000000
378	-0.000000
379	5123.394000
380	5082.936000
381	5146.688000
382	5352.656000
383	5231.282000
384	5531.652000
385	5433.572000
386	-0.000000
387	5309.746000

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Coordenada y	Valor y
388	5369.820000
389	5231.282000
390	5451.962000
391	5861.450000
392	5443.380000
393	5162.626000
394	5510.810000
395	5553.720000
396	5129.524000
397	-0.000000
398	5536.556000
399	4743.334000
400	5124.620000
401	-0.000000
402	-0.000000

4 Observações

- O solver HiGHS foi configurado com o método IPM (Interior Point Method).
- Este arquivo contém a solução detalhada para o problema ship04.
- As variáveis duais representam os multiplicadores de Lagrange das restrições.
- Os custos reduzidos (z) indicam o impacto de forçar variáveis não-básicas na base.