Resultados Detalhados - Método L-BFGS-B - Otimização de Grande Porte

Maria Marcolina Lima Cardoso

17 de setembro de 2025

1 Resumo dos Resultados

A tabela abaixo apresenta um resumo dos resultados obtidos com o método L-BFGS-B.

Tabela 1: Resumo dos resultados

Problema	Nº Variáveis	Iterações	Valor Mínimo	Tempo (s)
SQUARE ROOT 1	64	—	Falhou	—
SQUARE ROOT 2	64	—	Falhou	—
FREUDENTHAL ROTH	1000	—	Falhou	—
SPARSE MATRIX SQRT	55	39	1.627406e-06	0.301
ROSENBROCK	1000	—	Falhou	—
PENALTY	1000	7	2.890996e+02	4.166
TRIGONOMETRIC	1000	2	2.484451e-07	0.000
EXTENDED ROSENBROCK	1000	—	Falhou	—
EXTENDED POWELL	1000	1	0.000000e+00	0.569
QOR	50	20	1.175473e+03	0.098
GOR	50	52	1.381124e+03	0.351
PSP	50	48	2.020491e+02	0.277
TRIDIAGONAL	1000	13	8.843444e-07	5.973
ENGGVAL1	1000	7	1.108195e+03	10.933
LINEAR MINIMUM SURFACE	64	37	1.000001e+00	0.278
ULTS0	64	156	1.152495e-04	1.862

2 Valores das Variáveis

As tabelas abaixo apresentam os valores de cada variável para cada problema resolvido com sucesso.

2.1 Problema: SPARSE MATRIX SQRT

Informações:

- Número de variáveis: 55

- Iterações: 39

- Valor mínimo: 1.627406e-06

- Tempo de execução: 0.301s

Tabela 2: Valores das variáveis do problema SPARSE MATRIX SQRT

Coordenada	Valor	Coordenada	Valor	Coordenada	Valor
1	0.842043	2	-0.757924	3	0.412646
4	-0.289332	5	-0.132321	6	-0.990756
7	-0.953766	8	0.919920	9	-0.629988
10	-0.506354	11	0.998816	12	-0.491042
13	-0.602047	14	0.939496	15	-0.930041
16	-0.999151	17	-0.026607	18	-0.403961
19	0.278834	20	-0.850307	21	0.924086
22	0.194108	23	0.937234	24	-0.885271
25	0.175349	26	-0.528864	27	0.149876
28	-0.985059	29	-0.811528	30	0.997855
31	-0.321583	32	-0.158635	33	0.905480
34	-0.106035	35	-0.219231	36	0.995691
37	-0.669942	38	-0.905572	39	0.452123
40	-0.801446	41	-0.245115	42	-0.999890
43	0.985384	44	0.702224	45	0.970584
46	-0.990876	47	-0.444164	48	-0.936356
49	0.733576	50	-0.649950	51	-0.236410
52	0.790456	53	0.404209	54	0.566152
55	0.346462				

2.2   Problema: PENALTY

Informações:

- Número de variáveis: 1000

- Iterações: 7

- Valor mínimo: 2.890996e+02

- Tempo de execução: 4.166s

Tabela 3: Valores das variáveis do problema PENALTY

Coordenada	Valor	Coordenada	Valor	Coordenada	Valor
1	0.589850	2	0.589850	3	0.589850
4	0.589850	5	0.589850	6	0.589850
7	0.589850	8	0.589850	9	0.589850
10	0.589850	11	0.589850	12	0.589850
13	0.589850	14	0.589850	15	0.589850
16	0.589850	17	0.589850	18	0.589850
19	0.589850	20	0.589850	21	0.589850
22	0.589850	23	0.589850	24	0.589850
25	0.589850	26	0.589850	27	0.589850
28	0.589850	29	0.589850	30	0.589850
31	0.589850	32	0.589850	33	0.589850
34	0.589850	35	0.589850	36	0.589850
37	0.589850	38	0.589850	39	0.589850
40	0.589850	41	0.589850	42	0.589850
43	0.589850	44	0.589850	45	0.589850
46	0.589850	47	0.589850	48	0.589850
49	0.589850	50	0.589850	51	0.589850
52	0.589850	53	0.589850	54	0.589850
55	0.589850	56	0.589850	57	0.589850
58	0.589850	59	0.589850	60	0.589850
61	0.589850	62	0.589850	63	0.589850
64	0.589850	65	0.589850	66	0.589850
67	0.589850	68	0.589850	69	0.589850
70	0.589850	71	0.589850	72	0.589850
73	0.589850	74	0.589850	75	0.589850
76	0.589850	77	0.589850	78	0.589850
79	0.589850	80	0.589850	81	0.589850
82	0.589850	83	0.589850	84	0.589850
85	0.589850	86	0.589850	87	0.589850
88	0.589850	89	0.589850	90	0.589850
91	0.589850	92	0.589850	93	0.589850
94	0.589850	95	0.589850	96	0.589850
97	0.589850	98	0.589850	99	0.589850
100	0.589850	101	0.589850	102	0.589850
103	0.589850	104	0.589850	105	0.589850
106	0.589850	107	0.589850	108	0.589850
109	0.589850	110	0.589850	111	0.589850
112	0.589850	113	0.589850	114	0.589850
115	0.589850	116	0.589850	117	0.589850

Coordenada	Valor	Coordenada	Valor	Coordenada	Valor
118	0.589850	119	0.589850	120	0.589850
121	0.589850	122	0.589850	123	0.589850
124	0.589850	125	0.589850	126	0.589850
127	0.589850	128	0.589850	129	0.589850
130	0.589850	131	0.589850	132	0.589850
133	0.589850	134	0.589850	135	0.589850
136	0.589850	137	0.589850	138	0.589850
139	0.589850	140	0.589850	141	0.589850
142	0.589850	143	0.589850	144	0.589850
145	0.589850	146	0.589850	147	0.589850
148	0.589850	149	0.589850	150	0.589850
151	0.589850	152	0.589850	153	0.589850
154	0.589850	155	0.589850	156	0.589850
157	0.589850	158	0.589850	159	0.589850
160	0.589850	161	0.589850	162	0.589850
163	0.589850	164	0.589850	165	0.589850
166	0.589850	167	0.589850	168	0.589850
169	0.589850	170	0.589850	171	0.589850
172	0.589850	173	0.589850	174	0.589850
175	0.589850	176	0.589850	177	0.589850
178	0.589850	179	0.589850	180	0.589850
181	0.589850	182	0.589850	183	0.589850
184	0.589850	185	0.589850	186	0.589850
187	0.589850	188	0.589850	189	0.589850
190	0.589850	191	0.589850	192	0.589850
193	0.589850	194	0.589850	195	0.589850
196	0.589850	197	0.589850	198	0.589850
199	0.589850	200	0.589850	201	0.589850
202	0.589850	203	0.589850	204	0.589850
205	0.589850	206	0.589850	207	0.589850
208	0.589850	209	0.589850	210	0.589850
211	0.589850	212	0.589850	213	0.589850
214	0.589850	215	0.589850	216	0.589850
217	0.589850	218	0.589850	219	0.589850
220	0.589850	221	0.589850	222	0.589850
223	0.589850	224	0.589850	225	0.589850
226	0.589850	227	0.589850	228	0.589850
229	0.589850	230	0.589850	231	0.589850
232	0.589850	233	0.589850	234	0.589850
235	0.589850	236	0.589850	237	0.589850
238	0.589850	239	0.589850	240	0.589850
241	0.589850	242	0.589850	243	0.589850
244	0.589850	245	0.589850	246	0.589850
247	0.589850	248	0.589850	249	0.589850
250	0.589850	251	0.589850	252	0.589850
253	0.589850	254	0.589850	255	0.589850
256	0.589850	257	0.589850	258	0.589850
259	0.589850	260	0.589850	261	0.589850
262	0.589850	263	0.589850	264	0.589850
265	0.589850	266	0.589850	267	0.589850
268	0.589850	269	0.589850	270	0.589850
271	0.589850	272	0.589850	273	0.589850

Coordenada	Valor	Coordenada	Valor	Coordenada	Valor
274	0.589850	275	0.589850	276	0.589850
277	0.589850	278	0.589850	279	0.589850
280	0.589850	281	0.589850	282	0.589850
283	0.589850	284	0.589850	285	0.589850
286	0.589850	287	0.589850	288	0.589850
289	0.589850	290	0.589850	291	0.589850
292	0.589850	293	0.589850	294	0.589850
295	0.589850	296	0.589850	297	0.589850
298	0.589850	299	0.589850	300	0.589850
301	0.589850	302	0.589850	303	0.589850
304	0.589850	305	0.589850	306	0.589850
307	0.589850	308	0.589850	309	0.589850
310	0.589850	311	0.589850	312	0.589850
313	0.589850	314	0.589850	315	0.589850
316	0.589850	317	0.589850	318	0.589850
319	0.589850	320	0.589850	321	0.589850
322	0.589850	323	0.589850	324	0.589850
325	0.589850	326	0.589850	327	0.589850
328	0.589850	329	0.589850	330	0.589850
331	0.589850	332	0.589850	333	0.589850
334	0.589850	335	0.589850	336	0.589850
337	0.589850	338	0.589850	339	0.589850
340	0.589850	341	0.589850	342	0.589850
343	0.589850	344	0.589850	345	0.589850
346	0.589850	347	0.589850	348	0.589850
349	0.589850	350	0.589850	351	0.589850
352	0.589850	353	0.589850	354	0.589850
355	0.589850	356	0.589850	357	0.589850
358	0.589850	359	0.589850	360	0.589850
361	0.589850	362	0.589850	363	0.589850
364	0.589850	365	0.589850	366	0.589850
367	0.589850	368	0.589850	369	0.589850
370	0.589850	371	0.589850	372	0.589850
373	0.589850	374	0.589850	375	0.589850
376	0.589850	377	0.589850	378	0.589850
379	0.589850	380	0.589850	381	0.589850
382	0.589850	383	0.589850	384	0.589850
385	0.589850	386	0.589850	387	0.589850
388	0.589850	389	0.589850	390	0.589850
391	0.589850	392	0.589850	393	0.589850
394	0.589850	395	0.589850	396	0.589850
397	0.589850	398	0.589850	399	0.589850
400	0.589850	401	0.589850	402	0.589850
403	0.589850	404	0.589850	405	0.589850
406	0.589850	407	0.589850	408	0.589850
409	0.589850	410	0.589850	411	0.589850
412	0.589850	413	0.589850	414	0.589850
415	0.589850	416	0.589850	417	0.589850
418	0.589850	419	0.589850	420	0.589850
421	0.589850	422	0.589850	423	0.589850
424	0.589850	425	0.589850	426	0.589850
427	0.589850	428	0.589850	429	0.589850

Continua na próxima página

Coordenada	Valor	Coordenada	Valor	Coordenada	Valor
430	0.589850	431	0.589850	432	0.589850
433	0.589850	434	0.589850	435	0.589850
436	0.589850	437	0.589850	438	0.589850
439	0.589850	440	0.589850	441	0.589850
442	0.589850	443	0.589850	444	0.589850
445	0.589850	446	0.589850	447	0.589850
448	0.589850	449	0.589850	450	0.589850
451	0.589850	452	0.589850	453	0.589850
454	0.589850	455	0.589850	456	0.589850
457	0.589850	458	0.589850	459	0.589850
460	0.589850	461	0.589850	462	0.589850
463	0.589850	464	0.589850	465	0.589850
466	0.589850	467	0.589850	468	0.589850
469	0.589850	470	0.589850	471	0.589850
472	0.589850	473	0.589850	474	0.589850
475	0.589850	476	0.589850	477	0.589850
478	0.589850	479	0.589850	480	0.589850
481	0.589850	482	0.589850	483	0.589850
484	0.589850	485	0.589850	486	0.589850
487	0.589850	488	0.589850	489	0.589850
490	0.589850	491	0.589850	492	0.589850
493	0.589850	494	0.589850	495	0.589850
496	0.589850	497	0.589850	498	0.589850
499	0.589850	500	0.589850	501	0.589850
502	0.589850	503	0.589850	504	0.589850
505	0.589850	506	0.589850	507	0.589850
508	0.589850	509	0.589850	510	0.589850
511	0.589850	512	0.589850	513	0.589850
514	0.589850	515	0.589850	516	0.589850
517	0.589850	518	0.589850	519	0.589850
520	0.589850	521	0.589850	522	0.589850
523	0.589850	524	0.589850	525	0.589850
526	0.589850	527	0.589850	528	0.589850
529	0.589850	530	0.589850	531	0.589850
532	0.589850	533	0.589850	534	0.589850
535	0.589850	536	0.589850	537	0.589850
538	0.589850	539	0.589850	540	0.589850
541	0.589850	542	0.589850	543	0.589850
544	0.589850	545	0.589850	546	0.589850
547	0.589850	548	0.589850	549	0.589850
550	0.589850	551	0.589850	552	0.589850
553	0.589850	554	0.589850	555	0.589850
556	0.589850	557	0.589850	558	0.589850
559	0.589850	560	0.589850	561	0.589850
562	0.589850	563	0.589850	564	0.589850
565	0.589850	566	0.589850	567	0.589850
568	0.589850	569	0.589850	570	0.589850
571	0.589850	572	0.589850	573	0.589850
574	0.589850	575	0.589850	576	0.589850
577	0.589850	578	0.589850	579	0.589850
580	0.589850	581	0.589850	582	0.589850
583	0.589850	584	0.589850	585	0.589850

Coordenada	Valor	Coordenada	Valor	Coordenada	Valor
586	0.589850	587	0.589850	588	0.589850
589	0.589850	590	0.589850	591	0.589850
592	0.589850	593	0.589850	594	0.589850
595	0.589850	596	0.589850	597	0.589850
598	0.589850	599	0.589850	600	0.589850
601	0.589850	602	0.589850	603	0.589850
604	0.589850	605	0.589850	606	0.589850
607	0.589850	608	0.589850	609	0.589850
610	0.589850	611	0.589850	612	0.589850
613	0.589850	614	0.589850	615	0.589850
616	0.589850	617	0.589850	618	0.589850
619	0.589850	620	0.589850	621	0.589850
622	0.589850	623	0.589850	624	0.589850
625	0.589850	626	0.589850	627	0.589850
628	0.589850	629	0.589850	630	0.589850
631	0.589850	632	0.589850	633	0.589850
634	0.589850	635	0.589850	636	0.589850
637	0.589850	638	0.589850	639	0.589850
640	0.589850	641	0.589850	642	0.589850
643	0.589850	644	0.589850	645	0.589850
646	0.589850	647	0.589850	648	0.589850
649	0.589850	650	0.589850	651	0.589850
652	0.589850	653	0.589850	654	0.589850
655	0.589850	656	0.589850	657	0.589850
658	0.589850	659	0.589850	660	0.589850
661	0.589850	662	0.589850	663	0.589850
664	0.589850	665	0.589850	666	0.589850
667	0.589850	668	0.589850	669	0.589850
670	0.589850	671	0.589850	672	0.589850
673	0.589850	674	0.589850	675	0.589850
676	0.589850	677	0.589850	678	0.589850
679	0.589850	680	0.589850	681	0.589850
682	0.589850	683	0.589850	684	0.589850
685	0.589850	686	0.589850	687	0.589850
688	0.589850	689	0.589850	690	0.589850
691	0.589850	692	0.589850	693	0.589850
694	0.589850	695	0.589850	696	0.589850
697	0.589850	698	0.589850	699	0.589850
700	0.589850	701	0.589850	702	0.589850
703	0.589850	704	0.589850	705	0.589850
706	0.589850	707	0.589850	708	0.589850
709	0.589850	710	0.589850	711	0.589850
712	0.589850	713	0.589850	714	0.589850
715	0.589850	716	0.589850	717	0.589850
718	0.589850	719	0.589850	720	0.589850
721	0.589850	722	0.589850	723	0.589850
724	0.589850	725	0.589850	726	0.589850
727	0.589850	728	0.589850	729	0.589850
730	0.589850	731	0.589850	732	0.589850
733	0.589850	734	0.589850	735	0.589850
736	0.589850	737	0.589850	738	0.589850
739	0.589850	740	0.589850	741	0.589850

Coordenada	Valor	Coordenada	Valor	Coordenada	Valor
742	0.589850	743	0.589850	744	0.589850
745	0.589850	746	0.589850	747	0.589850
748	0.589850	749	0.589850	750	0.589850
751	0.589850	752	0.589850	753	0.589850
754	0.589850	755	0.589850	756	0.589850
757	0.589850	758	0.589850	759	0.589850
760	0.589850	761	0.589850	762	0.589850
763	0.589850	764	0.589850	765	0.589850
766	0.589850	767	0.589850	768	0.589850
769	0.589850	770	0.589850	771	0.589850
772	0.589850	773	0.589850	774	0.589850
775	0.589850	776	0.589850	777	0.589850
778	0.589850	779	0.589850	780	0.589850
781	0.589850	782	0.589850	783	0.589850
784	0.589850	785	0.589850	786	0.589850
787	0.589850	788	0.589850	789	0.589850
790	0.589850	791	0.589850	792	0.589850
793	0.589850	794	0.589850	795	0.589850
796	0.589850	797	0.589850	798	0.589850
799	0.589850	800	0.589850	801	0.589850
802	0.589850	803	0.589850	804	0.589850
805	0.589850	806	0.589850	807	0.589850
808	0.589850	809	0.589850	810	0.589850
811	0.589850	812	0.589850	813	0.589850
814	0.589850	815	0.589850	816	0.589850
817	0.589850	818	0.589850	819	0.589850
820	0.589850	821	0.589850	822	0.589850
823	0.589850	824	0.589850	825	0.589850
826	0.589850	827	0.589850	828	0.589850
829	0.589850	830	0.589850	831	0.589850
832	0.589850	833	0.589850	834	0.589850
835	0.589850	836	0.589850	837	0.589850
838	0.589850	839	0.589850	840	0.589850
841	0.589850	842	0.589850	843	0.589850
844	0.589850	845	0.589850	846	0.589850
847	0.589850	848	0.589850	849	0.589850
850	0.589850	851	0.589850	852	0.589850
853	0.589850	854	0.589850	855	0.589850
856	0.589850	857	0.589850	858	0.589850
859	0.589850	860	0.589850	861	0.589850
862	0.589850	863	0.589850	864	0.589850
865	0.589850	866	0.589850	867	0.589850
868	0.589850	869	0.589850	870	0.589850
871	0.589850	872	0.589850	873	0.589850
874	0.589850	875	0.589850	876	0.589850
877	0.589850	878	0.589850	879	0.589850
880	0.589850	881	0.589850	882	0.589850
883	0.589850	884	0.589850	885	0.589850
886	0.589850	887	0.589850	888	0.589850
889	0.589850	890	0.589850	891	0.589850
892	0.589850	893	0.589850	894	0.589850
895	0.589850	896	0.589850	897	0.589850

Coordenada	Valor	Coordenada	Valor	Coordenada	Valor
898	0.589850	899	0.589850	900	0.589850
901	0.589850	902	0.589850	903	0.589850
904	0.589850	905	0.589850	906	0.589850
907	0.589850	908	0.589850	909	0.589850
910	0.589850	911	0.589850	912	0.589850
913	0.589850	914	0.589850	915	0.589850
916	0.589850	917	0.589850	918	0.589850
919	0.589850	920	0.589850	921	0.589850
922	0.589850	923	0.589850	924	0.589850
925	0.589850	926	0.589850	927	0.589850
928	0.589850	929	0.589850	930	0.589850
931	0.589850	932	0.589850	933	0.589850
934	0.589850	935	0.589850	936	0.589850
937	0.589850	938	0.589850	939	0.589850
940	0.589850	941	0.589850	942	0.589850
943	0.589850	944	0.589850	945	0.589850
946	0.589850	947	0.589850	948	0.589850
949	0.589850	950	0.589850	951	0.589850
952	0.589850	953	0.589850	954	0.589850
955	0.589850	956	0.589850	957	0.589850
958	0.589850	959	0.589850	960	0.589850
961	0.589850	962	0.589850	963	0.589850
964	0.589850	965	0.589850	966	0.589850
967	0.589850	968	0.589850	969	0.589850
970	0.589850	971	0.589850	972	0.589850
973	0.589850	974	0.589850	975	0.589850
976	0.589850	977	0.589850	978	0.589850
979	0.589850	980	0.589850	981	0.589850
982	0.589850	983	0.589850	984	0.589850
985	0.589850	986	0.589850	987	0.589850
988	0.589850	989	0.589850	990	0.589850
991	0.589850	992	0.589850	993	0.589850
994	0.589850	995	0.589850	996	0.589850
997	0.589850	998	0.589850	999	0.589850
1000	0.589850				

2.3 Problema: TRIGONOMETRIC

Informações:

- Número de variáveis: 1

- Iterações: 2

- Valor mínimo: 2.484451e-07

- Tempo de execução: 0.000s

Tabela 4: Valores das variáveis do problema TRIGONOME-TRIC

Coordenada	Valor	Coordenada	Valor	Coordenada	Valor
1	0.000499				

2.4 Problema: EXTENDED POWELL

Informações:

- Número de variáveis: 1000

- Iterações: 1

- Valor mínimo: 0.000000e+00

- Tempo de execução: 0.569s

Tabela 5: Valores das variáveis do problema EXTENDED POWELL

Coordenada	Valor	Coordenada	Valor	Coordenada	Valor
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	0.000000	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	0.000000
28	0.000000	29	0.000000	30	0.000000
31	0.000000	32	0.000000	33	0.000000
34	0.000000	35	0.000000	36	0.000000
37	0.000000	38	0.000000	39	0.000000
40	0.000000	41	0.000000	42	0.000000
43	0.000000	44	0.000000	45	0.000000
46	0.000000	47	0.000000	48	0.000000
49	0.000000	50	0.000000	51	0.000000
52	0.000000	53	0.000000	54	0.000000
55	0.000000	56	0.000000	57	0.000000
58	0.000000	59	0.000000	60	0.000000
61	0.000000	62	0.000000	63	0.000000
64	0.000000	65	0.000000	66	0.000000
67	0.000000	68	0.000000	69	0.000000
70	0.000000	71	0.000000	72	0.000000
73	0.000000	74	0.000000	75	0.000000
76	0.000000	77	0.000000	78	0.000000
79	0.000000	80	0.000000	81	0.000000
82	0.000000	83	0.000000	84	0.000000
85	0.000000	86	0.000000	87	0.000000
88	0.000000	89	0.000000	90	0.000000
91	0.000000	92	0.000000	93	0.000000
94	0.000000	95	0.000000	96	0.000000
97	0.000000	98	0.000000	99	0.000000
100	0.000000	101	0.000000	102	0.000000
103	0.000000	104	0.000000	105	0.000000
106	0.000000	107	0.000000	108	0.000000
109	0.000000	110	0.000000	111	0.000000
112	0.000000	113	0.000000	114	0.000000
115	0.000000	116	0.000000	117	0.000000

Coordenada	Valor	Coordenada	Valor	Coordenada	Valor
118	0.000000	119	0.000000	120	0.000000
121	0.000000	122	0.000000	123	0.000000
124	0.000000	125	0.000000	126	0.000000
127	0.000000	128	0.000000	129	0.000000
130	0.000000	131	0.000000	132	0.000000
133	0.000000	134	0.000000	135	0.000000
136	0.000000	137	0.000000	138	0.000000
139	0.000000	140	0.000000	141	0.000000
142	0.000000	143	0.000000	144	0.000000
145	0.000000	146	0.000000	147	0.000000
148	0.000000	149	0.000000	150	0.000000
151	0.000000	152	0.000000	153	0.000000
154	0.000000	155	0.000000	156	0.000000
157	0.000000	158	0.000000	159	0.000000
160	0.000000	161	0.000000	162	0.000000
163	0.000000	164	0.000000	165	0.000000
166	0.000000	167	0.000000	168	0.000000
169	0.000000	170	0.000000	171	0.000000
172	0.000000	173	0.000000	174	0.000000
175	0.000000	176	0.000000	177	0.000000
178	0.000000	179	0.000000	180	0.000000
181	0.000000	182	0.000000	183	0.000000
184	0.000000	185	0.000000	186	0.000000
187	0.000000	188	0.000000	189	0.000000
190	0.000000	191	0.000000	192	0.000000
193	0.000000	194	0.000000	195	0.000000
196	0.000000	197	0.000000	198	0.000000
199	0.000000	200	0.000000	201	0.000000
202	0.000000	203	0.000000	204	0.000000
205	0.000000	206	0.000000	207	0.000000
208	0.000000	209	0.000000	210	0.000000
211	0.000000	212	0.000000	213	0.000000
214	0.000000	215	0.000000	216	0.000000
217	0.000000	218	0.000000	219	0.000000
220	0.000000	221	0.000000	222	0.000000
223	0.000000	224	0.000000	225	0.000000
226	0.000000	227	0.000000	228	0.000000
229	0.000000	230	0.000000	231	0.000000
232	0.000000	233	0.000000	234	0.000000
235	0.000000	236	0.000000	237	0.000000
238	0.000000	239	0.000000	240	0.000000
241	0.000000	242	0.000000	243	0.000000
244	0.000000	245	0.000000	246	0.000000
247	0.000000	248	0.000000	249	0.000000
250	0.000000	251	0.000000	252	0.000000
253	0.000000	254	0.000000	255	0.000000
256	0.000000	257	0.000000	258	0.000000
259	0.000000	260	0.000000	261	0.000000
262	0.000000	263	0.000000	264	0.000000
265	0.000000	266	0.000000	267	0.000000
268	0.000000	269	0.000000	270	0.000000
271	0.000000	272	0.000000	273	0.000000

Continua na próxima página

Coordenada	Valor	Coordenada	Valor	Coordenada	Valor
274	0.000000	275	0.000000	276	0.000000
277	0.000000	278	0.000000	279	0.000000
280	0.000000	281	0.000000	282	0.000000
283	0.000000	284	0.000000	285	0.000000
286	0.000000	287	0.000000	288	0.000000
289	0.000000	290	0.000000	291	0.000000
292	0.000000	293	0.000000	294	0.000000
295	0.000000	296	0.000000	297	0.000000
298	0.000000	299	0.000000	300	0.000000
301	0.000000	302	0.000000	303	0.000000
304	0.000000	305	0.000000	306	0.000000
307	0.000000	308	0.000000	309	0.000000
310	0.000000	311	0.000000	312	0.000000
313	0.000000	314	0.000000	315	0.000000
316	0.000000	317	0.000000	318	0.000000
319	0.000000	320	0.000000	321	0.000000
322	0.000000	323	0.000000	324	0.000000
325	0.000000	326	0.000000	327	0.000000
328	0.000000	329	0.000000	330	0.000000
331	0.000000	332	0.000000	333	0.000000
334	0.000000	335	0.000000	336	0.000000
337	0.000000	338	0.000000	339	0.000000
340	0.000000	341	0.000000	342	0.000000
343	0.000000	344	0.000000	345	0.000000
346	0.000000	347	0.000000	348	0.000000
349	0.000000	350	0.000000	351	0.000000
352	0.000000	353	0.000000	354	0.000000
355	0.000000	356	0.000000	357	0.000000
358	0.000000	359	0.000000	360	0.000000
361	0.000000	362	0.000000	363	0.000000
364	0.000000	365	0.000000	366	0.000000
367	0.000000	368	0.000000	369	0.000000
370	0.000000	371	0.000000	372	0.000000
373	0.000000	374	0.000000	375	0.000000
376	0.000000	377	0.000000	378	0.000000
379	0.000000	380	0.000000	381	0.000000
382	0.000000	383	0.000000	384	0.000000
385	0.000000	386	0.000000	387	0.000000
388	0.000000	389	0.000000	390	0.000000
391	0.000000	392	0.000000	393	0.000000
394	0.000000	395	0.000000	396	0.000000
397	0.000000	398	0.000000	399	0.000000
400	0.000000	401	0.000000	402	0.000000
403	0.000000	404	0.000000	405	0.000000
406	0.000000	407	0.000000	408	0.000000
409	0.000000	410	0.000000	411	0.000000
412	0.000000	413	0.000000	414	0.000000
415	0.000000	416	0.000000	417	0.000000
418	0.000000	419	0.000000	420	0.000000
421	0.000000	422	0.000000	423	0.000000
424	0.000000	425	0.000000	426	0.000000
427	0.000000	428	0.000000	429	0.000000

Coordenada	Valor	Coordenada	Valor	Coordenada	Valor
430	0.000000	431	0.000000	432	0.000000
433	0.000000	434	0.000000	435	0.000000
436	0.000000	437	0.000000	438	0.000000
439	0.000000	440	0.000000	441	0.000000
442	0.000000	443	0.000000	444	0.000000
445	0.000000	446	0.000000	447	0.000000
448	0.000000	449	0.000000	450	0.000000
451	0.000000	452	0.000000	453	0.000000
454	0.000000	455	0.000000	456	0.000000
457	0.000000	458	0.000000	459	0.000000
460	0.000000	461	0.000000	462	0.000000
463	0.000000	464	0.000000	465	0.000000
466	0.000000	467	0.000000	468	0.000000
469	0.000000	470	0.000000	471	0.000000
472	0.000000	473	0.000000	474	0.000000
475	0.000000	476	0.000000	477	0.000000
478	0.000000	479	0.000000	480	0.000000
481	0.000000	482	0.000000	483	0.000000
484	0.000000	485	0.000000	486	0.000000
487	0.000000	488	0.000000	489	0.000000
490	0.000000	491	0.000000	492	0.000000
493	0.000000	494	0.000000	495	0.000000
496	0.000000	497	0.000000	498	0.000000
499	0.000000	500	0.000000	501	0.000000
502	0.000000	503	0.000000	504	0.000000
505	0.000000	506	0.000000	507	0.000000
508	0.000000	509	0.000000	510	0.000000
511	0.000000	512	0.000000	513	0.000000
514	0.000000	515	0.000000	516	0.000000
517	0.000000	518	0.000000	519	0.000000
520	0.000000	521	0.000000	522	0.000000
523	0.000000	524	0.000000	525	0.000000
526	0.000000	527	0.000000	528	0.000000
529	0.000000	530	0.000000	531	0.000000
532	0.000000	533	0.000000	534	0.000000
535	0.000000	536	0.000000	537	0.000000
538	0.000000	539	0.000000	540	0.000000
541	0.000000	542	0.000000	543	0.000000
544	0.000000	545	0.000000	546	0.000000
547	0.000000	548	0.000000	549	0.000000
550	0.000000	551	0.000000	552	0.000000
553	0.000000	554	0.000000	555	0.000000
556	0.000000	557	0.000000	558	0.000000
559	0.000000	560	0.000000	561	0.000000
562	0.000000	563	0.000000	564	0.000000
565	0.000000	566	0.000000	567	0.000000
568	0.000000	569	0.000000	570	0.000000
571	0.000000	572	0.000000	573	0.000000
574	0.000000	575	0.000000	576	0.000000
577	0.000000	578	0.000000	579	0.000000
580	0.000000	581	0.000000	582	0.000000
583	0.000000	584	0.000000	585	0.000000

Coordenada	Valor	Coordenada	Valor	Coordenada	Valor
586	0.000000	587	0.000000	588	0.000000
589	0.000000	590	0.000000	591	0.000000
592	0.000000	593	0.000000	594	0.000000
595	0.000000	596	0.000000	597	0.000000
598	0.000000	599	0.000000	600	0.000000
601	0.000000	602	0.000000	603	0.000000
604	0.000000	605	0.000000	606	0.000000
607	0.000000	608	0.000000	609	0.000000
610	0.000000	611	0.000000	612	0.000000
613	0.000000	614	0.000000	615	0.000000
616	0.000000	617	0.000000	618	0.000000
619	0.000000	620	0.000000	621	0.000000
622	0.000000	623	0.000000	624	0.000000
625	0.000000	626	0.000000	627	0.000000
628	0.000000	629	0.000000	630	0.000000
631	0.000000	632	0.000000	633	0.000000
634	0.000000	635	0.000000	636	0.000000
637	0.000000	638	0.000000	639	0.000000
640	0.000000	641	0.000000	642	0.000000
643	0.000000	644	0.000000	645	0.000000
646	0.000000	647	0.000000	648	0.000000
649	0.000000	650	0.000000	651	0.000000
652	0.000000	653	0.000000	654	0.000000
655	0.000000	656	0.000000	657	0.000000
658	0.000000	659	0.000000	660	0.000000
661	0.000000	662	0.000000	663	0.000000
664	0.000000	665	0.000000	666	0.000000
667	0.000000	668	0.000000	669	0.000000
670	0.000000	671	0.000000	672	0.000000
673	0.000000	674	0.000000	675	0.000000
676	0.000000	677	0.000000	678	0.000000
679	0.000000	680	0.000000	681	0.000000
682	0.000000	683	0.000000	684	0.000000
685	0.000000	686	0.000000	687	0.000000
688	0.000000	689	0.000000	690	0.000000
691	0.000000	692	0.000000	693	0.000000
694	0.000000	695	0.000000	696	0.000000
697	0.000000	698	0.000000	699	0.000000
700	0.000000	701	0.000000	702	0.000000
703	0.000000	704	0.000000	705	0.000000
706	0.000000	707	0.000000	708	0.000000
709	0.000000	710	0.000000	711	0.000000
712	0.000000	713	0.000000	714	0.000000
715	0.000000	716	0.000000	717	0.000000
718	0.000000	719	0.000000	720	0.000000
721	0.000000	722	0.000000	723	0.000000
724	0.000000	725	0.000000	726	0.000000
727	0.000000	728	0.000000	729	0.000000
730	0.000000	731	0.000000	732	0.000000
733	0.000000	734	0.000000	735	0.000000
736	0.000000	737	0.000000	738	0.000000
739	0.000000	740	0.000000	741	0.000000

Coordenada	Valor	Coordenada	Valor	Coordenada	Valor
742	0.000000	743	0.000000	744	0.000000
745	0.000000	746	0.000000	747	0.000000
748	0.000000	749	0.000000	750	0.000000
751	0.000000	752	0.000000	753	0.000000
754	0.000000	755	0.000000	756	0.000000
757	0.000000	758	0.000000	759	0.000000
760	0.000000	761	0.000000	762	0.000000
763	0.000000	764	0.000000	765	0.000000
766	0.000000	767	0.000000	768	0.000000
769	0.000000	770	0.000000	771	0.000000
772	0.000000	773	0.000000	774	0.000000
775	0.000000	776	0.000000	777	0.000000
778	0.000000	779	0.000000	780	0.000000
781	0.000000	782	0.000000	783	0.000000
784	0.000000	785	0.000000	786	0.000000
787	0.000000	788	0.000000	789	0.000000
790	0.000000	791	0.000000	792	0.000000
793	0.000000	794	0.000000	795	0.000000
796	0.000000	797	0.000000	798	0.000000
799	0.000000	800	0.000000	801	0.000000
802	0.000000	803	0.000000	804	0.000000
805	0.000000	806	0.000000	807	0.000000
808	0.000000	809	0.000000	810	0.000000
811	0.000000	812	0.000000	813	0.000000
814	0.000000	815	0.000000	816	0.000000
817	0.000000	818	0.000000	819	0.000000
820	0.000000	821	0.000000	822	0.000000
823	0.000000	824	0.000000	825	0.000000
826	0.000000	827	0.000000	828	0.000000
829	0.000000	830	0.000000	831	0.000000
832	0.000000	833	0.000000	834	0.000000
835	0.000000	836	0.000000	837	0.000000
838	0.000000	839	0.000000	840	0.000000
841	0.000000	842	0.000000	843	0.000000
844	0.000000	845	0.000000	846	0.000000
847	0.000000	848	0.000000	849	0.000000
850	0.000000	851	0.000000	852	0.000000
853	0.000000	854	0.000000	855	0.000000
856	0.000000	857	0.000000	858	0.000000
859	0.000000	860	0.000000	861	0.000000
862	0.000000	863	0.000000	864	0.000000
865	0.000000	866	0.000000	867	0.000000
868	0.000000	869	0.000000	870	0.000000
871	0.000000	872	0.000000	873	0.000000
874	0.000000	875	0.000000	876	0.000000
877	0.000000	878	0.000000	879	0.000000
880	0.000000	881	0.000000	882	0.000000
883	0.000000	884	0.000000	885	0.000000
886	0.000000	887	0.000000	888	0.000000
889	0.000000	890	0.000000	891	0.000000
892	0.000000	893	0.000000	894	0.000000
895	0.000000	896	0.000000	897	0.000000

Coordenada	Valor	Coordenada	Valor	Coordenada	Valor
898	0.000000	899	0.000000	900	0.000000
901	0.000000	902	0.000000	903	0.000000
904	0.000000	905	0.000000	906	0.000000
907	0.000000	908	0.000000	909	0.000000
910	0.000000	911	0.000000	912	0.000000
913	0.000000	914	0.000000	915	0.000000
916	0.000000	917	0.000000	918	0.000000
919	0.000000	920	0.000000	921	0.000000
922	0.000000	923	0.000000	924	0.000000
925	0.000000	926	0.000000	927	0.000000
928	0.000000	929	0.000000	930	0.000000
931	0.000000	932	0.000000	933	0.000000
934	0.000000	935	0.000000	936	0.000000
937	0.000000	938	0.000000	939	0.000000
940	0.000000	941	0.000000	942	0.000000
943	0.000000	944	0.000000	945	0.000000
946	0.000000	947	0.000000	948	0.000000
949	0.000000	950	0.000000	951	0.000000
952	0.000000	953	0.000000	954	0.000000
955	0.000000	956	0.000000	957	0.000000
958	0.000000	959	0.000000	960	0.000000
961	0.000000	962	0.000000	963	0.000000
964	0.000000	965	0.000000	966	0.000000
967	0.000000	968	0.000000	969	0.000000
970	0.000000	971	0.000000	972	0.000000
973	0.000000	974	0.000000	975	0.000000
976	0.000000	977	0.000000	978	0.000000
979	0.000000	980	0.000000	981	0.000000
982	0.000000	983	0.000000	984	0.000000
985	0.000000	986	0.000000	987	0.000000
988	0.000000	989	0.000000	990	0.000000
991	0.000000	992	0.000000	993	0.000000
994	0.000000	995	0.000000	996	0.000000
997	0.000000	998	0.000000	999	0.000000
1000	0.000000				

2.5 Problema: QOR

Informações:

- Número de variáveis: 50

- Iterações: 20

- Valor mínimo: 1.175473e+03

- Tempo de execução: 0.098s

Tabela 6: Valores das variáveis do problema QOR

Coordenada	Valor	Coordenada	Valor	Coordenada	Valor
1	0.593136	2	-0.709456	3	0.062332
4	-2.649303	5	1.583374	6	4.022576
7	0.144228	8	1.924323	9	-0.061424
10	-0.638811	11	0.599102	12	0.446356
13	1.280494	14	0.710612	15	-0.876981
16	-3.036066	17	-1.387234	18	0.741992
19	-7.112590	20	1.374955	21	3.570837
22	2.265195	23	2.567951	24	3.754686
25	-2.325561	26	1.212258	27	1.372224
28	2.314085	29	-0.733315	30	-0.476414
31	0.695097	32	-2.396665	33	3.807336
34	2.121398	35	-3.200368	36	1.106534
37	0.355111	38	-1.581366	39	-1.477096
40	4.309964	41	0.681916	42	2.351913
43	-1.034731	44	1.980146	45	-0.341196
46	-0.357053	47	-3.515380	48	-0.100847
49	-3.303460	50	1.196128		

2.6   Problema: GOR

Informações:

- Número de variáveis: 50

- Iterações: 52

- Valor mínimo: 1.381124e+03

- Tempo de execução: 0.351s

Tabela 7: Valores das variáveis do problema GOR

Coordenada	Valor	Coordenada	Valor	Coordenada	Valor
1	-1.800669	2	-0.347579	3	-3.027388
4	-0.120076	5	7.388188	6	1.154197
7	3.904867	8	0.264881	9	0.471148
10	0.277793	11	0.229252	12	-0.059459
13	-0.403313	14	-1.753550	15	-7.133876
16	-0.840604	17	-1.129955	18	-9.464395
19	-2.108389	20	9.490887	21	1.358526
22	-0.473494	23	8.523357	24	-5.568523
25	0.898621	26	0.667763	27	4.095170
28	0.441100	29	-0.179383	30	0.711304
31	-1.629091	32	5.207756	33	8.918888
34	-2.275755	35	1.301997	36	0.194103
37	-1.021460	38	-1.610980	39	10.607454
40	4.079236	41	4.063934	42	-6.318354
43	2.119914	44	-0.564924	45	0.481733
46	-5.388147	47	-2.499976	48	-0.268851
49	6.393372	50	-0.190464		

2.7 Problema: PSP

Informações:

- Número de variáveis: 50

- Iterações: 48

- Valor mínimo: 2.020491e+02

- Tempo de execução: 0.277s

Tabela 8: Valores das variáveis do problema PSP

Coordenada	Valor	Coordenada	Valor	Coordenada	Valor
1	4.997422	2	4.943952	3	5.001390
4	2.902886	5	4.995245	6	4.955218
7	4.996929	8	3.497417	9	5.000074
10	4.698504	11	4.993280	12	4.793078
13	4.742005	14	0.983897	15	5.267434
16	1.082893	17	3.714277	18	5.005190
19	2.736646	20	2.646223	21	3.411026
22	5.002712	23	0.971650	24	4.969275
25	2.233255	26	3.583760	27	5.037144
28	5.003591	29	4.253896	30	4.996670
31	4.998220	32	4.932294	33	1.454436
34	5.030546	35	4.996557	36	4.533624
37	3.707464	38	4.511448	39	5.894752
40	5.006355	41	4.112808	42	1.836033
43	5.000826	44	3.433818	45	4.987699
46	1.646557	47	3.448748	48	3.608035
49	1.738677	50	5.009075		

2.8   Problema: TRIDIAGONAL

Informações:

- Número de variáveis: 1000

- Iterações: 13

- Valor mínimo: 8.843444e-07

- Tempo de execução: 5.973s

Tabela 9: Valores das variáveis do problema TRIDIAGONAL

Coordenada	Valor	Coordenada	Valor	Coordenada	Valor
1	1.000016	2	0.500016	3	0.250004
4	0.124994	5	0.062484	6	0.031230
7	0.015606	8	0.007775	9	0.003901
10	0.002117	11	0.000761	12	0.000548
13	-0.000000	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	-0.000000
28	-0.000000	29	-0.000000	30	-0.000000
31	-0.000000	32	-0.000000	33	-0.000000
34	-0.000000	35	-0.000000	36	-0.000000
37	-0.000000	38	-0.000000	39	-0.000000
40	-0.000000	41	-0.000000	42	-0.000000
43	-0.000000	44	-0.000000	45	-0.000000
46	-0.000000	47	-0.000000	48	-0.000000
49	-0.000000	50	-0.000000	51	-0.000000
52	-0.000000	53	-0.000000	54	-0.000000
55	-0.000000	56	-0.000000	57	-0.000000
58	-0.000000	59	-0.000000	60	-0.000000
61	-0.000000	62	-0.000000	63	-0.000000
64	-0.000000	65	-0.000000	66	-0.000000
67	-0.000000	68	-0.000000	69	-0.000000
70	-0.000000	71	-0.000000	72	-0.000000
73	-0.000000	74	-0.000000	75	-0.000000
76	-0.000000	77	-0.000000	78	-0.000000
79	-0.000000	80	-0.000000	81	-0.000000
82	-0.000000	83	-0.000000	84	-0.000000
85	-0.000000	86	-0.000000	87	-0.000000
88	-0.000000	89	-0.000000	90	-0.000000
91	-0.000000	92	-0.000000	93	-0.000000
94	-0.000000	95	-0.000000	96	-0.000000
97	-0.000000	98	-0.000000	99	-0.000000
100	-0.000000	101	-0.000000	102	-0.000000
103	-0.000000	104	-0.000000	105	-0.000000
106	-0.000000	107	-0.000000	108	-0.000000
109	-0.000000	110	-0.000000	111	-0.000000
112	-0.000000	113	-0.000000	114	-0.000000
115	-0.000000	116	-0.000000	117	-0.000000

Coordenada	Valor	Coordenada	Valor	Coordenada	Valor
118	-0.000000	119	-0.000000	120	-0.000000
121	-0.000000	122	-0.000000	123	-0.000000
124	-0.000000	125	-0.000000	126	-0.000000
127	-0.000000	128	-0.000000	129	-0.000000
130	-0.000000	131	-0.000000	132	-0.000000
133	-0.000000	134	-0.000000	135	-0.000000
136	-0.000000	137	-0.000000	138	-0.000000
139	-0.000000	140	-0.000000	141	-0.000000
142	-0.000000	143	-0.000000	144	-0.000000
145	-0.000000	146	-0.000000	147	-0.000000
148	-0.000000	149	-0.000000	150	-0.000000
151	-0.000000	152	-0.000000	153	-0.000000
154	-0.000000	155	-0.000000	156	-0.000000
157	-0.000000	158	-0.000000	159	-0.000000
160	-0.000000	161	-0.000000	162	-0.000000
163	-0.000000	164	-0.000000	165	-0.000000
166	-0.000000	167	-0.000000	168	-0.000000
169	-0.000000	170	-0.000000	171	-0.000000
172	-0.000000	173	-0.000000	174	-0.000000
175	-0.000000	176	-0.000000	177	-0.000000
178	-0.000000	179	-0.000000	180	-0.000000
181	-0.000000	182	-0.000000	183	-0.000000
184	-0.000000	185	-0.000000	186	-0.000000
187	-0.000000	188	-0.000000	189	-0.000000
190	-0.000000	191	-0.000000	192	-0.000000
193	-0.000000	194	-0.000000	195	-0.000000
196	-0.000000	197	-0.000000	198	-0.000000
199	-0.000000	200	-0.000000	201	-0.000000
202	-0.000000	203	-0.000000	204	-0.000000
205	-0.000000	206	-0.000000	207	-0.000000
208	-0.000000	209	-0.000000	210	-0.000000
211	-0.000000	212	-0.000000	213	-0.000000
214	-0.000000	215	-0.000000	216	-0.000000
217	-0.000000	218	-0.000000	219	-0.000000
220	-0.000000	221	-0.000000	222	-0.000000
223	-0.000000	224	-0.000000	225	-0.000000
226	-0.000000	227	-0.000000	228	-0.000000
229	-0.000000	230	-0.000000	231	-0.000000
232	-0.000000	233	-0.000000	234	-0.000000
235	-0.000000	236	-0.000000	237	-0.000000
238	-0.000000	239	-0.000000	240	-0.000000
241	-0.000000	242	-0.000000	243	-0.000000
244	-0.000000	245	-0.000000	246	-0.000000
247	-0.000000	248	-0.000000	249	-0.000000
250	-0.000000	251	-0.000000	252	-0.000000
253	-0.000000	254	-0.000000	255	-0.000000
256	-0.000000	257	-0.000000	258	-0.000000
259	-0.000000	260	-0.000000	261	-0.000000
262	-0.000000	263	-0.000000	264	-0.000000
265	-0.000000	266	-0.000000	267	-0.000000
268	-0.000000	269	-0.000000	270	-0.000000
271	-0.000000	272	-0.000000	273	-0.000000

Coordenada	Valor	Coordenada	Valor	Coordenada	Valor
274	-0.000000	275	-0.000000	276	-0.000000
277	-0.000000	278	-0.000000	279	-0.000000
280	-0.000000	281	-0.000000	282	-0.000000
283	-0.000000	284	-0.000000	285	-0.000000
286	-0.000000	287	-0.000000	288	-0.000000
289	-0.000000	290	-0.000000	291	-0.000000
292	-0.000000	293	-0.000000	294	-0.000000
295	-0.000000	296	-0.000000	297	-0.000000
298	-0.000000	299	-0.000000	300	-0.000000
301	-0.000000	302	-0.000000	303	-0.000000
304	-0.000000	305	-0.000000	306	-0.000000
307	-0.000000	308	-0.000000	309	-0.000000
310	-0.000000	311	-0.000000	312	-0.000000
313	-0.000000	314	-0.000000	315	-0.000000
316	-0.000000	317	-0.000000	318	-0.000000
319	-0.000000	320	-0.000000	321	-0.000000
322	-0.000000	323	-0.000000	324	-0.000000
325	-0.000000	326	-0.000000	327	-0.000000
328	-0.000000	329	-0.000000	330	-0.000000
331	-0.000000	332	-0.000000	333	-0.000000
334	-0.000000	335	-0.000000	336	-0.000000
337	-0.000000	338	-0.000000	339	-0.000000
340	-0.000000	341	-0.000000	342	-0.000000
343	-0.000000	344	-0.000000	345	-0.000000
346	-0.000000	347	-0.000000	348	-0.000000
349	-0.000000	350	-0.000000	351	-0.000000
352	-0.000000	353	-0.000000	354	-0.000000
355	-0.000000	356	-0.000000	357	-0.000000
358	-0.000000	359	-0.000000	360	-0.000000
361	-0.000000	362	-0.000000	363	-0.000000
364	-0.000000	365	-0.000000	366	-0.000000
367	-0.000000	368	-0.000000	369	-0.000000
370	-0.000000	371	-0.000000	372	-0.000000
373	-0.000000	374	-0.000000	375	-0.000000
376	-0.000000	377	-0.000000	378	-0.000000
379	-0.000000	380	-0.000000	381	-0.000000
382	-0.000000	383	-0.000000	384	-0.000000
385	-0.000000	386	-0.000000	387	-0.000000
388	-0.000000	389	-0.000000	390	-0.000000
391	-0.000000	392	-0.000000	393	-0.000000
394	-0.000000	395	-0.000000	396	-0.000000
397	-0.000000	398	-0.000000	399	-0.000000
400	-0.000000	401	-0.000000	402	-0.000000
403	-0.000000	404	-0.000000	405	-0.000000
406	-0.000000	407	-0.000000	408	-0.000000
409	-0.000000	410	-0.000000	411	-0.000000
412	-0.000000	413	-0.000000	414	-0.000000
415	-0.000000	416	-0.000000	417	-0.000000
418	-0.000000	419	-0.000000	420	-0.000000
421	-0.000000	422	-0.000000	423	-0.000000
424	-0.000000	425	-0.000000	426	-0.000000
427	-0.000000	428	-0.000000	429	-0.000000

Coordenada	Valor	Coordenada	Valor	Coordenada	Valor
430	-0.000000	431	-0.000000	432	-0.000000
433	-0.000000	434	-0.000000	435	-0.000000
436	-0.000000	437	-0.000000	438	-0.000000
439	-0.000000	440	-0.000000	441	-0.000000
442	-0.000000	443	-0.000000	444	-0.000000
445	-0.000000	446	-0.000000	447	-0.000000
448	-0.000000	449	-0.000000	450	-0.000000
451	-0.000000	452	-0.000000	453	-0.000000
454	-0.000000	455	-0.000000	456	-0.000000
457	-0.000000	458	-0.000000	459	-0.000000
460	-0.000000	461	-0.000000	462	-0.000000
463	-0.000000	464	-0.000000	465	-0.000000
466	-0.000000	467	-0.000000	468	-0.000000
469	-0.000000	470	-0.000000	471	-0.000000
472	-0.000000	473	-0.000000	474	-0.000000
475	-0.000000	476	-0.000000	477	-0.000000
478	-0.000000	479	-0.000000	480	-0.000000
481	-0.000000	482	-0.000000	483	-0.000000
484	-0.000000	485	-0.000000	486	-0.000000
487	-0.000000	488	-0.000000	489	-0.000000
490	-0.000000	491	-0.000000	492	-0.000000
493	-0.000000	494	-0.000000	495	-0.000000
496	-0.000000	497	-0.000000	498	-0.000000
499	-0.000000	500	-0.000000	501	-0.000000
502	-0.000000	503	-0.000000	504	-0.000000
505	-0.000000	506	-0.000000	507	-0.000000
508	-0.000000	509	-0.000000	510	-0.000000
511	-0.000000	512	-0.000000	513	-0.000000
514	-0.000000	515	-0.000000	516	-0.000000
517	-0.000000	518	-0.000000	519	-0.000000
520	-0.000000	521	-0.000000	522	-0.000000
523	-0.000000	524	-0.000000	525	-0.000000
526	-0.000000	527	-0.000000	528	-0.000000
529	-0.000000	530	-0.000000	531	-0.000000
532	-0.000000	533	-0.000000	534	-0.000000
535	-0.000000	536	-0.000000	537	-0.000000
538	-0.000000	539	-0.000000	540	-0.000000
541	-0.000000	542	-0.000000	543	-0.000000
544	-0.000000	545	-0.000000	546	-0.000000
547	-0.000000	548	-0.000000	549	-0.000000
550	-0.000000	551	-0.000000	552	-0.000000
553	-0.000000	554	-0.000000	555	-0.000000
556	-0.000000	557	-0.000000	558	-0.000000
559	-0.000000	560	-0.000000	561	-0.000000
562	-0.000000	563	-0.000000	564	-0.000000
565	-0.000000	566	-0.000000	567	-0.000000
568	-0.000000	569	-0.000000	570	-0.000000
571	-0.000000	572	-0.000000	573	-0.000000
574	-0.000000	575	-0.000000	576	-0.000000
577	-0.000000	578	-0.000000	579	-0.000000
580	-0.000000	581	-0.000000	582	-0.000000
583	-0.000000	584	-0.000000	585	-0.000000

Coordenada	Valor	Coordenada	Valor	Coordenada	Valor
586	-0.000000	587	-0.000000	588	-0.000000
589	-0.000000	590	-0.000000	591	-0.000000
592	-0.000000	593	-0.000000	594	-0.000000
595	-0.000000	596	-0.000000	597	-0.000000
598	-0.000000	599	-0.000000	600	-0.000000
601	-0.000000	602	-0.000000	603	-0.000000
604	-0.000000	605	-0.000000	606	-0.000000
607	-0.000000	608	-0.000000	609	-0.000000
610	-0.000000	611	-0.000000	612	-0.000000
613	-0.000000	614	-0.000000	615	-0.000000
616	-0.000000	617	-0.000000	618	-0.000000
619	-0.000000	620	-0.000000	621	-0.000000
622	-0.000000	623	-0.000000	624	-0.000000
625	-0.000000	626	-0.000000	627	-0.000000
628	-0.000000	629	-0.000000	630	-0.000000
631	-0.000000	632	-0.000000	633	-0.000000
634	-0.000000	635	-0.000000	636	-0.000000
637	-0.000000	638	-0.000000	639	-0.000000
640	-0.000000	641	-0.000000	642	-0.000000
643	-0.000000	644	-0.000000	645	-0.000000
646	-0.000000	647	-0.000000	648	-0.000000
649	-0.000000	650	-0.000000	651	-0.000000
652	-0.000000	653	-0.000000	654	-0.000000
655	-0.000000	656	-0.000000	657	-0.000000
658	-0.000000	659	-0.000000	660	-0.000000
661	-0.000000	662	-0.000000	663	-0.000000
664	-0.000000	665	-0.000000	666	-0.000000
667	-0.000000	668	-0.000000	669	-0.000000
670	-0.000000	671	-0.000000	672	-0.000000
673	-0.000000	674	-0.000000	675	-0.000000
676	-0.000000	677	-0.000000	678	-0.000000
679	-0.000000	680	-0.000000	681	-0.000000
682	-0.000000	683	-0.000000	684	-0.000000
685	-0.000000	686	-0.000000	687	-0.000000
688	-0.000000	689	-0.000000	690	-0.000000
691	-0.000000	692	-0.000000	693	-0.000000
694	-0.000000	695	-0.000000	696	-0.000000
697	-0.000000	698	-0.000000	699	-0.000000
700	-0.000000	701	-0.000000	702	-0.000000
703	-0.000000	704	-0.000000	705	-0.000000
706	-0.000000	707	-0.000000	708	-0.000000
709	-0.000000	710	-0.000000	711	-0.000000
712	-0.000000	713	-0.000000	714	-0.000000
715	-0.000000	716	-0.000000	717	-0.000000
718	-0.000000	719	-0.000000	720	-0.000000
721	-0.000000	722	-0.000000	723	-0.000000
724	-0.000000	725	-0.000000	726	-0.000000
727	-0.000000	728	-0.000000	729	-0.000000
730	-0.000000	731	-0.000000	732	-0.000000
733	-0.000000	734	-0.000000	735	-0.000000
736	-0.000000	737	-0.000000	738	-0.000000
739	-0.000000	740	-0.000000	741	-0.000000

Coordenada	Valor	Coordenada	Valor	Coordenada	Valor
742	-0.000000	743	-0.000000	744	-0.000000
745	-0.000000	746	-0.000000	747	-0.000000
748	-0.000000	749	-0.000000	750	-0.000000
751	-0.000000	752	-0.000000	753	-0.000000
754	-0.000000	755	-0.000000	756	-0.000000
757	-0.000000	758	-0.000000	759	-0.000000
760	-0.000000	761	-0.000000	762	-0.000000
763	-0.000000	764	-0.000000	765	-0.000000
766	-0.000000	767	-0.000000	768	-0.000000
769	-0.000000	770	-0.000000	771	-0.000000
772	-0.000000	773	-0.000000	774	-0.000000
775	-0.000000	776	-0.000000	777	-0.000000
778	-0.000000	779	-0.000000	780	-0.000000
781	-0.000000	782	-0.000000	783	-0.000000
784	-0.000000	785	-0.000000	786	-0.000000
787	-0.000000	788	-0.000000	789	-0.000000
790	-0.000000	791	-0.000000	792	-0.000000
793	-0.000000	794	-0.000000	795	-0.000000
796	-0.000000	797	-0.000000	798	-0.000000
799	-0.000000	800	-0.000000	801	-0.000000
802	-0.000000	803	-0.000000	804	-0.000000
805	-0.000000	806	-0.000000	807	-0.000000
808	-0.000000	809	-0.000000	810	-0.000000
811	-0.000000	812	-0.000000	813	-0.000000
814	-0.000000	815	-0.000000	816	-0.000000
817	-0.000000	818	-0.000000	819	-0.000000
820	-0.000000	821	-0.000000	822	-0.000000
823	-0.000000	824	-0.000000	825	-0.000000
826	-0.000000	827	-0.000000	828	-0.000000
829	-0.000000	830	-0.000000	831	-0.000000
832	-0.000000	833	-0.000000	834	-0.000000
835	-0.000000	836	-0.000000	837	-0.000000
838	-0.000000	839	-0.000000	840	-0.000000
841	-0.000000	842	-0.000000	843	-0.000000
844	-0.000000	845	-0.000000	846	-0.000000
847	-0.000000	848	-0.000000	849	-0.000000
850	-0.000000	851	-0.000000	852	-0.000000
853	-0.000000	854	-0.000000	855	-0.000000
856	-0.000000	857	-0.000000	858	-0.000000
859	-0.000000	860	-0.000000	861	-0.000000
862	-0.000000	863	-0.000000	864	-0.000000
865	-0.000000	866	-0.000000	867	-0.000000
868	-0.000000	869	-0.000000	870	-0.000000
871	-0.000000	872	-0.000000	873	-0.000000
874	-0.000000	875	-0.000000	876	-0.000000
877	-0.000000	878	-0.000000	879	-0.000000
880	-0.000000	881	-0.000000	882	-0.000000
883	-0.000000	884	-0.000000	885	-0.000000
886	-0.000000	887	-0.000000	888	-0.000000
889	-0.000000	890	-0.000000	891	-0.000000
892	-0.000000	893	-0.000000	894	-0.000000
895	-0.000000	896	-0.000000	897	-0.000000

Coordenada	Valor	Coordenada	Valor	Coordenada	Valor
898	-0.000000	899	-0.000000	900	-0.000000
901	-0.000000	902	-0.000000	903	-0.000000
904	-0.000000	905	-0.000000	906	-0.000000
907	-0.000000	908	-0.000000	909	-0.000000
910	-0.000000	911	-0.000000	912	-0.000000
913	-0.000000	914	-0.000000	915	-0.000000
916	-0.000000	917	-0.000000	918	-0.000000
919	-0.000000	920	-0.000000	921	-0.000000
922	-0.000000	923	-0.000000	924	-0.000000
925	-0.000000	926	-0.000000	927	-0.000000
928	-0.000000	929	-0.000000	930	-0.000000
931	-0.000000	932	-0.000000	933	-0.000000
934	-0.000000	935	-0.000000	936	-0.000000
937	-0.000000	938	-0.000000	939	-0.000000
940	-0.000000	941	-0.000000	942	-0.000000
943	-0.000000	944	-0.000000	945	-0.000000
946	-0.000000	947	-0.000000	948	-0.000000
949	-0.000000	950	-0.000000	951	-0.000000
952	-0.000000	953	-0.000000	954	-0.000000
955	-0.000000	956	-0.000000	957	-0.000000
958	-0.000000	959	-0.000000	960	-0.000000
961	-0.000000	962	-0.000000	963	-0.000000
964	-0.000000	965	-0.000000	966	-0.000000
967	-0.000000	968	-0.000000	969	-0.000000
970	-0.000000	971	-0.000000	972	-0.000000
973	-0.000000	974	-0.000000	975	-0.000000
976	-0.000000	977	-0.000000	978	-0.000000
979	-0.000000	980	-0.000000	981	-0.000000
982	-0.000000	983	-0.000000	984	-0.000000
985	-0.000000	986	-0.000000	987	-0.000000
988	-0.000000	989	-0.000000	990	-0.000000
991	-0.000000	992	-0.000000	993	-0.000000
994	-0.000000	995	-0.000000	996	-0.000000
997	-0.000000	998	-0.000000	999	-0.000000
1000	-0.000000				

2.9 Problema: ENGGVAL1

Informações:

- Número de variáveis: 1000
- Iterações: 7
- Valor mínimo: 1.108195e+03
- Tempo de execução: 10.933s

Tabela 10: Valores das variáveis do problema ENGGVAL1

Coordenada	Valor	Coordenada	Valor	Coordenada	Valor
1	0.899793	2	0.546519	3	0.650833
4	0.624161	5	0.631111	6	0.629962
7	0.629962	8	0.629962	9	0.629962
10	0.629962	11	0.629962	12	0.629962
13	0.629962	14	0.629962	15	0.629962
16	0.629962	17	0.629962	18	0.629962
19	0.629962	20	0.629962	21	0.629962
22	0.629962	23	0.629962	24	0.629962
25	0.629962	26	0.629962	27	0.629962
28	0.629962	29	0.629962	30	0.629962
31	0.629962	32	0.629962	33	0.629962
34	0.629962	35	0.629962	36	0.629962
37	0.629962	38	0.629962	39	0.629962
40	0.629962	41	0.629962	42	0.629962
43	0.629962	44	0.629962	45	0.629962
46	0.629962	47	0.629962	48	0.629962
49	0.629962	50	0.629962	51	0.629962
52	0.629962	53	0.629962	54	0.629962
55	0.629962	56	0.629962	57	0.629962
58	0.629962	59	0.629962	60	0.629962
61	0.629962	62	0.629962	63	0.629962
64	0.629962	65	0.629962	66	0.629962
67	0.629962	68	0.629962	69	0.629962
70	0.629962	71	0.629962	72	0.629962
73	0.629962	74	0.629962	75	0.629962
76	0.629962	77	0.629962	78	0.629962
79	0.629962	80	0.629962	81	0.629962
82	0.629962	83	0.629962	84	0.629962
85	0.629962	86	0.629962	87	0.629962
88	0.629962	89	0.629962	90	0.629962
91	0.629962	92	0.629962	93	0.629962
94	0.629962	95	0.629962	96	0.629962
97	0.629962	98	0.629962	99	0.629962
100	0.629962	101	0.629962	102	0.629962
103	0.629962	104	0.629962	105	0.629962
106	0.629962	107	0.629962	108	0.629962
109	0.629962	110	0.629962	111	0.629962
112	0.629962	113	0.629962	114	0.629962
115	0.629962	116	0.629962	117	0.629962

Coordenada	Valor	Coordenada	Valor	Coordenada	Valor
118	0.629962	119	0.629962	120	0.629962
121	0.629962	122	0.629962	123	0.629962
124	0.629962	125	0.629962	126	0.629962
127	0.629962	128	0.629962	129	0.629962
130	0.629962	131	0.629962	132	0.629962
133	0.629962	134	0.629962	135	0.629962
136	0.629962	137	0.629962	138	0.629962
139	0.629962	140	0.629962	141	0.629962
142	0.629962	143	0.629962	144	0.629962
145	0.629962	146	0.629962	147	0.629962
148	0.629962	149	0.629962	150	0.629962
151	0.629962	152	0.629962	153	0.629962
154	0.629962	155	0.629962	156	0.629962
157	0.629962	158	0.629962	159	0.629962
160	0.629962	161	0.629962	162	0.629962
163	0.629962	164	0.629962	165	0.629962
166	0.629962	167	0.629962	168	0.629962
169	0.629962	170	0.629962	171	0.629962
172	0.629962	173	0.629962	174	0.629962
175	0.629962	176	0.629962	177	0.629962
178	0.629962	179	0.629962	180	0.629962
181	0.629962	182	0.629962	183	0.629962
184	0.629962	185	0.629962	186	0.629962
187	0.629962	188	0.629962	189	0.629962
190	0.629962	191	0.629962	192	0.629962
193	0.629962	194	0.629962	195	0.629962
196	0.629962	197	0.629962	198	0.629962
199	0.629962	200	0.629962	201	0.629962
202	0.629962	203	0.629962	204	0.629962
205	0.629962	206	0.629962	207	0.629962
208	0.629962	209	0.629962	210	0.629962
211	0.629962	212	0.629962	213	0.629962
214	0.629962	215	0.629962	216	0.629962
217	0.629962	218	0.629962	219	0.629962
220	0.629962	221	0.629962	222	0.629962
223	0.629962	224	0.629962	225	0.629962
226	0.629962	227	0.629962	228	0.629962
229	0.629962	230	0.629962	231	0.629962
232	0.629962	233	0.629962	234	0.629962
235	0.629962	236	0.629962	237	0.629962
238	0.629962	239	0.629962	240	0.629962
241	0.629962	242	0.629962	243	0.629962
244	0.629962	245	0.629962	246	0.629962
247	0.629962	248	0.629962	249	0.629962
250	0.629962	251	0.629962	252	0.629962
253	0.629962	254	0.629962	255	0.629962
256	0.629962	257	0.629962	258	0.629962
259	0.629962	260	0.629962	261	0.629962
262	0.629962	263	0.629962	264	0.629962
265	0.629962	266	0.629962	267	0.629962
268	0.629962	269	0.629962	270	0.629962
271	0.629962	272	0.629962	273	0.629962

Coordenada	Valor	Coordenada	Valor	Coordenada	Valor
274	0.629962	275	0.629962	276	0.629962
277	0.629962	278	0.629962	279	0.629962
280	0.629962	281	0.629962	282	0.629962
283	0.629962	284	0.629962	285	0.629962
286	0.629962	287	0.629962	288	0.629962
289	0.629962	290	0.629962	291	0.629962
292	0.629962	293	0.629962	294	0.629962
295	0.629962	296	0.629962	297	0.629962
298	0.629962	299	0.629962	300	0.629962
301	0.629962	302	0.629962	303	0.629962
304	0.629962	305	0.629962	306	0.629962
307	0.629962	308	0.629962	309	0.629962
310	0.629962	311	0.629962	312	0.629962
313	0.629962	314	0.629962	315	0.629962
316	0.629962	317	0.629962	318	0.629962
319	0.629962	320	0.629962	321	0.629962
322	0.629962	323	0.629962	324	0.629962
325	0.629962	326	0.629962	327	0.629962
328	0.629962	329	0.629962	330	0.629962
331	0.629962	332	0.629962	333	0.629962
334	0.629962	335	0.629962	336	0.629962
337	0.629962	338	0.629962	339	0.629962
340	0.629962	341	0.629962	342	0.629962
343	0.629962	344	0.629962	345	0.629962
346	0.629962	347	0.629962	348	0.629962
349	0.629962	350	0.629962	351	0.629962
352	0.629962	353	0.629962	354	0.629962
355	0.629962	356	0.629962	357	0.629962
358	0.629962	359	0.629962	360	0.629962
361	0.629962	362	0.629962	363	0.629962
364	0.629962	365	0.629962	366	0.629962
367	0.629962	368	0.629962	369	0.629962
370	0.629962	371	0.629962	372	0.629962
373	0.629962	374	0.629962	375	0.629962
376	0.629962	377	0.629962	378	0.629962
379	0.629962	380	0.629962	381	0.629962
382	0.629962	383	0.629962	384	0.629962
385	0.629962	386	0.629962	387	0.629962
388	0.629962	389	0.629962	390	0.629962
391	0.629962	392	0.629962	393	0.629962
394	0.629962	395	0.629962	396	0.629962
397	0.629962	398	0.629962	399	0.629962
400	0.629962	401	0.629962	402	0.629962
403	0.629962	404	0.629962	405	0.629962
406	0.629962	407	0.629962	408	0.629962
409	0.629962	410	0.629962	411	0.629962
412	0.629962	413	0.629962	414	0.629962
415	0.629962	416	0.629962	417	0.629962
418	0.629962	419	0.629962	420	0.629962
421	0.629962	422	0.629962	423	0.629962
424	0.629962	425	0.629962	426	0.629962
427	0.629962	428	0.629962	429	0.629962

Coordenada	Valor	Coordenada	Valor	Coordenada	Valor
430	0.629962	431	0.629962	432	0.629962
433	0.629962	434	0.629962	435	0.629962
436	0.629962	437	0.629962	438	0.629962
439	0.629962	440	0.629962	441	0.629962
442	0.629962	443	0.629962	444	0.629962
445	0.629962	446	0.629962	447	0.629962
448	0.629962	449	0.629962	450	0.629962
451	0.629962	452	0.629962	453	0.629962
454	0.629962	455	0.629962	456	0.629962
457	0.629962	458	0.629962	459	0.629962
460	0.629962	461	0.629962	462	0.629962
463	0.629961	464	0.629961	465	0.629961
466	0.629960	467	0.629960	468	0.629960
469	0.629960	470	0.629960	471	0.629960
472	0.629960	473	0.629960	474	0.629960
475	0.629960	476	0.629960	477	0.629960
478	0.629960	479	0.629960	480	0.629960
481	0.629960	482	0.629960	483	0.629960
484	0.629960	485	0.629960	486	0.629960
487	0.629960	488	0.629960	489	0.629960
490	0.629960	491	0.629960	492	0.629960
493	0.629960	494	0.629960	495	0.629960
496	0.629960	497	0.629960	498	0.629960
499	0.629960	500	0.629960	501	0.629960
502	0.629960	503	0.629960	504	0.629960
505	0.629960	506	0.629960	507	0.629960
508	0.629960	509	0.629960	510	0.629960
511	0.629960	512	0.629960	513	0.629960
514	0.629960	515	0.629960	516	0.629960
517	0.629960	518	0.629960	519	0.629960
520	0.629960	521	0.629960	522	0.629960
523	0.629960	524	0.629960	525	0.629960
526	0.629960	527	0.629960	528	0.629960
529	0.629960	530	0.629960	531	0.629960
532	0.629960	533	0.629960	534	0.629960
535	0.629960	536	0.629960	537	0.629960
538	0.629960	539	0.629960	540	0.629960
541	0.629960	542	0.629960	543	0.629960
544	0.629960	545	0.629960	546	0.629960
547	0.629960	548	0.629960	549	0.629960
550	0.629960	551	0.629960	552	0.629960
553	0.629960	554	0.629960	555	0.629960
556	0.629960	557	0.629960	558	0.629960
559	0.629960	560	0.629960	561	0.629960
562	0.629960	563	0.629960	564	0.629960
565	0.629960	566	0.629960	567	0.629960
568	0.629960	569	0.629960	570	0.629960
571	0.629960	572	0.629960	573	0.629960
574	0.629960	575	0.629960	576	0.629960
577	0.629960	578	0.629960	579	0.629960
580	0.629960	581	0.629960	582	0.629960
583	0.629960	584	0.629960	585	0.629960

Coordenada	Valor	Coordenada	Valor	Coordenada	Valor
586	0.629960	587	0.629960	588	0.629960
589	0.629960	590	0.629960	591	0.629960
592	0.629960	593	0.629960	594	0.629960
595	0.629960	596	0.629960	597	0.629960
598	0.629960	599	0.629960	600	0.629960
601	0.629960	602	0.629960	603	0.629960
604	0.629960	605	0.629960	606	0.629960
607	0.629960	608	0.629960	609	0.629960
610	0.629960	611	0.629960	612	0.629960
613	0.629960	614	0.629960	615	0.629960
616	0.629960	617	0.629960	618	0.629960
619	0.629960	620	0.629960	621	0.629960
622	0.629960	623	0.629960	624	0.629960
625	0.629960	626	0.629960	627	0.629960
628	0.629960	629	0.629960	630	0.629960
631	0.629960	632	0.629960	633	0.629960
634	0.629960	635	0.629960	636	0.629960
637	0.629960	638	0.629960	639	0.629960
640	0.629960	641	0.629960	642	0.629960
643	0.629960	644	0.629960	645	0.629960
646	0.629960	647	0.629960	648	0.629960
649	0.629960	650	0.629960	651	0.629960
652	0.629960	653	0.629960	654	0.629960
655	0.629960	656	0.629960	657	0.629960
658	0.629960	659	0.629960	660	0.629960
661	0.629960	662	0.629960	663	0.629960
664	0.629960	665	0.629960	666	0.629960
667	0.629960	668	0.629960	669	0.629960
670	0.629960	671	0.629960	672	0.629960
673	0.629960	674	0.629960	675	0.629960
676	0.629960	677	0.629960	678	0.629960
679	0.629960	680	0.629960	681	0.629960
682	0.629960	683	0.629960	684	0.629960
685	0.629960	686	0.629960	687	0.629960
688	0.629960	689	0.629960	690	0.629960
691	0.629960	692	0.629960	693	0.629960
694	0.629960	695	0.629960	696	0.629960
697	0.629960	698	0.629960	699	0.629960
700	0.629960	701	0.629960	702	0.629960
703	0.629960	704	0.629960	705	0.629960
706	0.629960	707	0.629960	708	0.629960
709	0.629960	710	0.629960	711	0.629960
712	0.629960	713	0.629960	714	0.629960
715	0.629960	716	0.629960	717	0.629960
718	0.629960	719	0.629960	720	0.629960
721	0.629960	722	0.629960	723	0.629960
724	0.629960	725	0.629960	726	0.629960
727	0.629960	728	0.629960	729	0.629960
730	0.629960	731	0.629960	732	0.629960
733	0.629960	734	0.629960	735	0.629960
736	0.629960	737	0.629960	738	0.629960
739	0.629960	740	0.629960	741	0.629960

Coordenada	Valor	Coordenada	Valor	Coordenada	Valor
742	0.629960	743	0.629960	744	0.629960
745	0.629960	746	0.629960	747	0.629960
748	0.629960	749	0.629960	750	0.629960
751	0.629960	752	0.629960	753	0.629960
754	0.629960	755	0.629960	756	0.629960
757	0.629960	758	0.629960	759	0.629960
760	0.629960	761	0.629960	762	0.629960
763	0.629960	764	0.629960	765	0.629960
766	0.629960	767	0.629960	768	0.629960
769	0.629960	770	0.629960	771	0.629960
772	0.629960	773	0.629960	774	0.629960
775	0.629960	776	0.629960	777	0.629960
778	0.629960	779	0.629960	780	0.629960
781	0.629960	782	0.629960	783	0.629960
784	0.629960	785	0.629960	786	0.629960
787	0.629960	788	0.629960	789	0.629960
790	0.629960	791	0.629960	792	0.629960
793	0.629960	794	0.629960	795	0.629960
796	0.629960	797	0.629960	798	0.629960
799	0.629960	800	0.629960	801	0.629960
802	0.629960	803	0.629960	804	0.629960
805	0.629960	806	0.629960	807	0.629960
808	0.629960	809	0.629960	810	0.629960
811	0.629960	812	0.629960	813	0.629960
814	0.629960	815	0.629960	816	0.629960
817	0.629960	818	0.629960	819	0.629960
820	0.629960	821	0.629960	822	0.629960
823	0.629960	824	0.629960	825	0.629960
826	0.629960	827	0.629960	828	0.629960
829	0.629960	830	0.629960	831	0.629960
832	0.629960	833	0.629960	834	0.629960
835	0.629960	836	0.629960	837	0.629960
838	0.629960	839	0.629960	840	0.629960
841	0.629960	842	0.629960	843	0.629960
844	0.629960	845	0.629960	846	0.629960
847	0.629960	848	0.629960	849	0.629960
850	0.629960	851	0.629960	852	0.629960
853	0.629960	854	0.629960	855	0.629960
856	0.629960	857	0.629960	858	0.629960
859	0.629960	860	0.629960	861	0.629960
862	0.629960	863	0.629960	864	0.629960
865	0.629960	866	0.629960	867	0.629960
868	0.629960	869	0.629960	870	0.629960
871	0.629960	872	0.629960	873	0.629960
874	0.629960	875	0.629960	876	0.629960
877	0.629960	878	0.629960	879	0.629960
880	0.629960	881	0.629960	882	0.629960
883	0.629960	884	0.629960	885	0.629960
886	0.629960	887	0.629960	888	0.629960
889	0.629960	890	0.629960	891	0.629960
892	0.629960	893	0.629960	894	0.629960
895	0.629960	896	0.629960	897	0.629960

Coordenada	Valor	Coordenada	Valor	Coordenada	Valor
898	0.629960	899	0.629960	900	0.629960
901	0.629960	902	0.629960	903	0.629960
904	0.629960	905	0.629960	906	0.629960
907	0.629960	908	0.629960	909	0.629960
910	0.629962	911	0.629962	912	0.629963
913	0.629964	914	0.629964	915	0.629966
916	0.629966	917	0.629966	918	0.629966
919	0.629966	920	0.629964	921	0.629964
922	0.629963	923	0.629962	924	0.629961
925	0.629960	926	0.629960	927	0.629960
928	0.629960	929	0.629960	930	0.629960
931	0.629960	932	0.629960	933	0.629960
934	0.629960	935	0.629960	936	0.629960
937	0.629960	938	0.629960	939	0.629960
940	0.629960	941	0.629960	942	0.629960
943	0.629960	944	0.629960	945	0.629960
946	0.629960	947	0.629960	948	0.629960
949	0.629960	950	0.629960	951	0.629960
952	0.629960	953	0.629960	954	0.629960
955	0.629960	956	0.629960	957	0.629960
958	0.629960	959	0.629960	960	0.629960
961	0.629960	962	0.629960	963	0.629960
964	0.629960	965	0.629960	966	0.629960
967	0.629960	968	0.629960	969	0.629960
970	0.629960	971	0.629960	972	0.629960
973	0.629960	974	0.629960	975	0.629960
976	0.629960	977	0.629960	978	0.629960
979	0.629960	980	0.629960	981	0.629960
982	0.629960	983	0.629960	984	0.629960
985	0.629960	986	0.629960	987	0.629960
988	0.629960	989	0.629960	990	0.629960
991	0.629960	992	0.629960	993	0.629960
994	0.629960	995	0.630515	996	0.627990
997	0.635832	998	0.604644	999	0.716384
1000	0.000000				

2.10 Problema: LINEAR MINIMUM SURFACE

Informações:

- Número de variáveis: 64

- Iterações: 37

- Valor mínimo: 1.000001e+00

- Tempo de execução: 0.278s

Tabela 11: Valores das variáveis do problema LINEAR MINIMUM SURFACE

Coordenada	Valor	Coordenada	Valor	Coordenada	Valor
1	3.062592	2	3.062093	3	3.062467
4	3.062223	5	3.062181	6	3.062541
7	3.062734	8	3.062962	9	3.062115
10	3.062560	11	3.062150	12	3.062301
13	3.062381	14	3.062471	15	3.062824
16	3.062843	17	3.062605	18	3.062285
19	3.062303	20	3.062450	21	3.062258
22	3.062641	23	3.062709	24	3.062927
25	3.062364	26	3.062411	27	3.062394
28	3.062365	29	3.062503	30	3.062540
31	3.062710	32	3.062820	33	3.062317
34	3.062465	35	3.062314	36	3.062582
37	3.062328	38	3.062701	39	3.062523
40	3.062641	41	3.062361	42	3.062570
43	3.062419	44	3.062445	45	3.062605
46	3.062504	47	3.062683	48	3.062466
49	3.062741	50	3.062238	51	3.062559
52	3.062570	53	3.062487	54	3.062760
55	3.062433	56	3.062778	57	3.061824
58	3.062794	59	3.062312	60	3.062583
61	3.062743	62	3.062445	63	3.062863
64	3.062471				

2.11 Problema: ULTS0

Informações:

- Número de variáveis: 64

- Iterações: 156

- Valor mínimo: 1.152495e-04

- Tempo de execução: 1.862s

Tabela 12: Valores das variáveis do problema ULTS0

Coordenada	Valor	Coordenada	Valor	Coordenada	Valor
1	0.008804	2	-0.001788	3	-0.008848
4	-0.018591	5	-0.024225	6	-0.033676
7	-0.040518	8	-0.050387	9	0.005304
10	-0.004874	11	-0.011455	12	-0.020070
13	-0.025393	14	-0.033763	15	-0.040063
16	-0.049556	17	-0.001672	18	-0.010153
19	-0.015285	20	-0.022322	21	-0.026183
22	-0.032994	23	-0.037872	24	-0.045743
25	-0.009213	26	-0.016044	27	-0.019498
28	-0.024636	29	-0.026896	30	-0.031818
31	-0.035024	32	-0.041229	33	-0.018783
34	-0.023358	35	-0.024542	36	-0.027450
37	-0.027440	38	-0.030159	39	-0.031122
40	-0.035161	41	-0.030619	42	-0.032183
43	-0.030513	44	-0.030607	45	-0.027702
46	-0.027620	47	-0.025753	48	-0.026843
49	-0.042803	50	-0.041525	51	-0.036767
52	-0.033926	53	-0.027959	54	-0.024966
55	-0.020043	56	-0.018337	57	-0.058344
58	-0.053037	59	-0.044253	60	-0.037905
61	-0.027728	62	-0.021222	63	-0.012316
64	-0.006664				