

## Results for TSPLIB\_1 (kTSP)

Keld Helsgaun, June 21, 2023

BKS from

Pandiri, V. and Singh, A.:

Two multi-start heuristics for the k-traveling salesman problem.

OPSEARCH, 57:1164-1204 (2020)

$k = \text{floor}(n/4)$

Instance	$k$	BKS	LKH-3
a280	70	670	<b>649</b>
ali535	133	12602	<b>11773</b>
att48	12	1925	1925
att532	133	3980	<b>3812</b>
bayg29	7	332	332
bays29	7	400	400
berlin52	13	679	679
bier127	31	10619	10619
brazil58	14	4965	4965
brg180	45	530	<b>500</b>
burma14	<b>3</b>	<b>359</b>	359
ch130	32	1130	1130
ch150	37	1276	1276
d198	49	5028	<b>4964</b>
d493	123	9576	<b>9356</b>
d657	164	12299	<b>11116</b>
dantzig42	10	145	145
eil101	25	107	107
eil51	12	82	82
eil76	19	102	102
fl417	104	2257	<b>1831</b>
fri26	6	243	243
gil262	65	545	541
gr120	30	1308	1308
gr137	34	17399	17399
gr17	4	234	234
gr202	50	8404	<b>8142</b>
gr21	5	324	324
gr229	57	18555	18555
gr24	6	264	264
gr431	107	14857	<b>14525</b>
gr48	12	874	874
gr666	166	27358	<b>26381</b>
gr96	24	10460	10460
hk48	12	2827	2827

kroA100	25	4970	<b>4931</b>
kroA150	37	5690	5690
kroA200	50	6202	<b>6154</b>
kroB100	25	4684	<b>4305</b>
kroB150	37	5812	5812
kroB200	50	6370	<b>6016</b>
kroC100	25	4964	4964
kroD100	25	4762	4762
kroE100	25	3905	3905
lin105	26	2606	2606
lin318	79	8912	<b>8544</b>
p654	163	8128	<b>6929</b>
pa561	140	523	<b>465</b>
pcb442	110	11099	<b>10932</b>
pr107	26	8443	8443
pr124	31	14640	<b>14325</b>
pr136	34	21116	21116
pr144	36	14327	14327
pr152	38	23373	<b>20029</b>
pr226	56	20033	20033
pr264	66	9232	9232
pr299	74	11392	<b>11077</b>
pr439	109	20874	<b>19751</b>
pr76	19	23450	23450
rat195	48	557	<b>554</b>
rat575	143	1589	<b>1572</b>
rat783	195	2192	<b>2004</b>
rat99	24	284	284
rd100	25	1438	1438
rd400	100	3362	<b>3091</b>
si175	43	4881	<b>4873</b>
si535	133	11208	<b>10839</b>
st70	17	120	120
swiss42	10	192	192
ts225	56	28828	28828
tsp225	56	918	<b>913</b>
u159	39	8983	8983
u574	143	8310	<b>7584</b>
u724	181	10071	<b>8709</b>
ulysses16	4	<b>935</b>	936
ulysses22	4	<b>747</b>	748

The deviation in the results for burma14, ulysses16 and ulysses22 is probably due to different implementations of the GEO norm.