

Master Theorem

(a) Case 1

$$L(n) = 2L(n/3) + 6n^3$$

$$a = 2, b = 3, d = 3$$

$$a < b^d$$

$$2 < 3^3$$

$$O(n^3)$$

(b) Case 3

$$L(n) = 4L(n/2) + 16$$

$$a = 4, b = 2, d = 0$$

$$a > b^d$$

$$4 > 2^0$$

$$O(n^{\log_2 4}) = O(n^2)$$

Kuprine

3,4,5,7,9 size
5,7,9,11,14 val

A	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
cost	0	0	5	5	5	10	10	10	15	15	15	20	20	20	25	25	25	30	30	30	35
best			1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
B	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
cost	0	0	5	7	7	10	12	14	15	17	19	21	22	24	26	28	29	31	33	35	36
best			1	2	2	1	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2
C	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
cost	0	0	5	7	9	10	12	14	16	18	19	21	23	25	27	28	30	32	34	36	37
best			1	2	3	1	2	2	3	3	2	2	3	3	3	2	3	3	3	3	3
D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
cost	0	0	5	7	9	10	12	14	16	18	19	21	23	25	27	28	30	32	34	36	37
best			1	2	3	1	2	2	3	3	2	2	3	3	3	2	3	3	3	3	3
E	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
cost	0	0	5	7	9	10	12	14	16	18	19	21	23	25	27	28	30	32	34	36	37
best			1	2	3	1	2	2	3	3	2	2	3	3	3	2	3	3	3	3	3

4 8-4 12-4 16-4 21-5
B B B B C

TSP

Maršrutas 4 5 2 1 3 4
Kainos 2 4 5 2 21 Viso: 34

	1	2	3	4	5	
1	inf	5	2	12	23	-2
2	5	inf	12	28	12	-5
3	6	16	inf	21	14	-6
4	3	29	13	inf	2	-2
5	25	4	13	5	inf	-4
				-1		20

Bound 0 20

	1	2	3	4	5		
1	inf	3	0	9	21	$D[1,3] = 3 + 7$	<u>10</u>
2	0	inf	7	22	7	$D[2,1] = 7 + 0$	7
3	0	10	inf	14	8	$D[3,1] = 9 + 0$	9
4	1	27	11	inf	0	$D[4,5] = 1 + 7$	8
5	21	0	7	0	inf	$D[5,2] = 0 + 3$	3
						$D[5,4] = 0 + 9$	9

top Bound 1,3 30

	1	2	4	5	
2	0	inf	22	7	
3	inf	10	14	8	-8
4	1	27	inf	0	
5	21	0	0	inf	

bot Bound 1,3 28

	1	2	4	5		
2	0	inf	22	7	$D[2,1] = 7 + 1$	<u>8</u>
3	inf	2	6	0	$D[3,5] = 2 + 0$	2
4	1	27	inf	0	$D[4,5] = 1 + 0$	1
5	21	0	0	inf	$D[5,2] = 0 + 2$	2
					$D[5,4] = 0 + 6$	6

top Bound 2,1 36

bot Bound 2,1 28

	2	4	5		
3	2	6	0	$D[3,5] = 1 + 0$	1
4	27	inf	0	$D[4,5] = 27 + 0$	<u>27</u>
5	0	0	inf	$D[5,2] = 0 + 1$	1
				$D[5,4] = 0 + 5$	5

TSP

top Bound 4,5 55

	2	4	
3	2	6	-2
5	0	inf	
		-4	

bot Bound 4,5 34

	2	4
3	0	0
5	0	inf

top Bound 3,4 34

	2
5	0

4,5 5,2 2,1 1,3 3,4