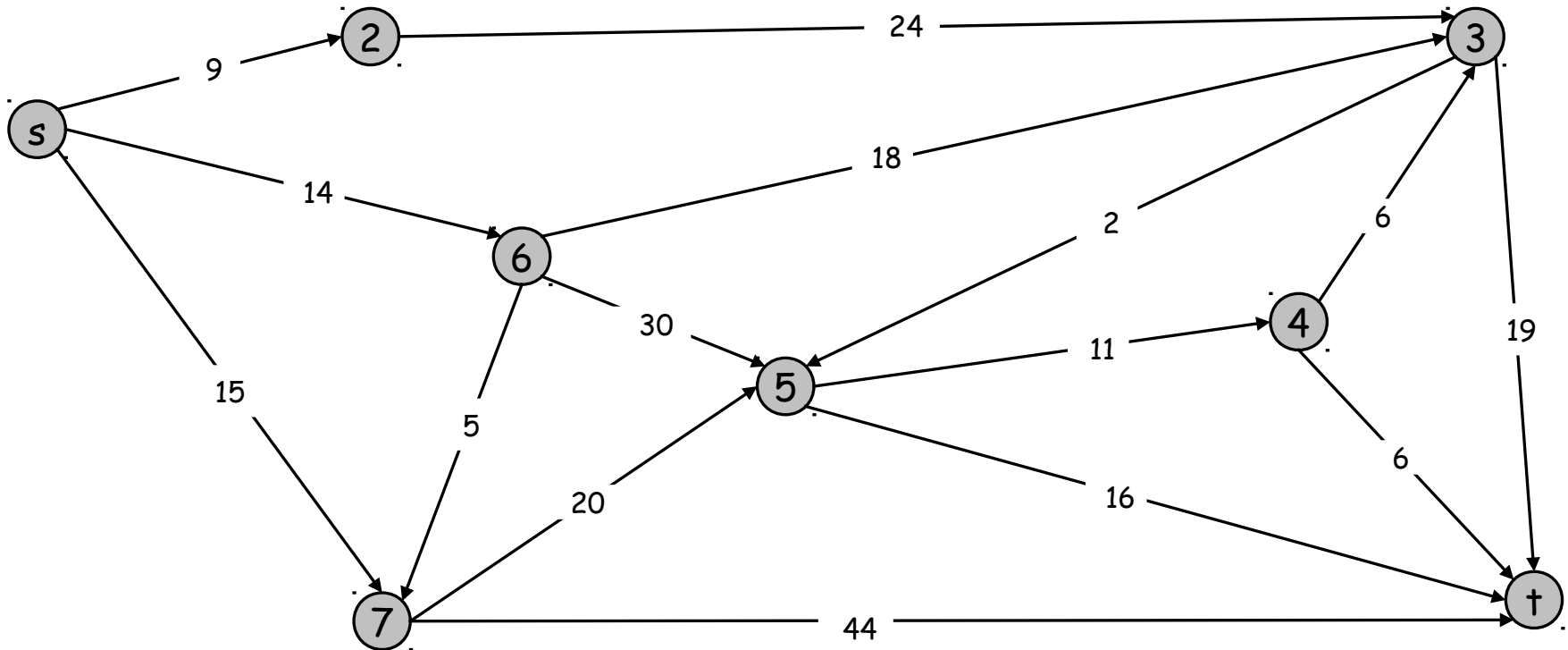


Dijkstra's Shortest Path Algorithm

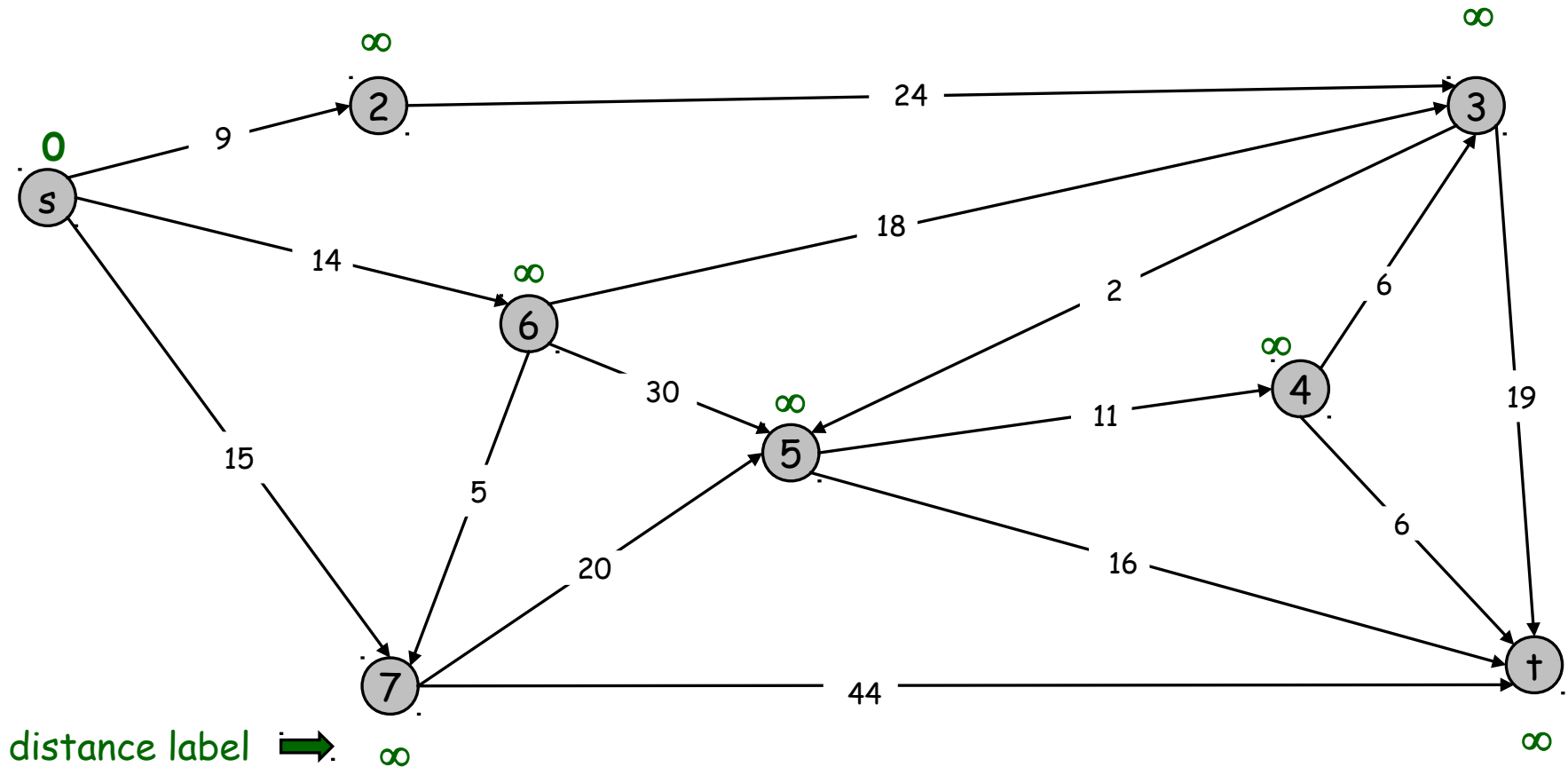
Find shortest path from s to t.



Dijkstra's Shortest Path Algorithm

$S = \{ \}$

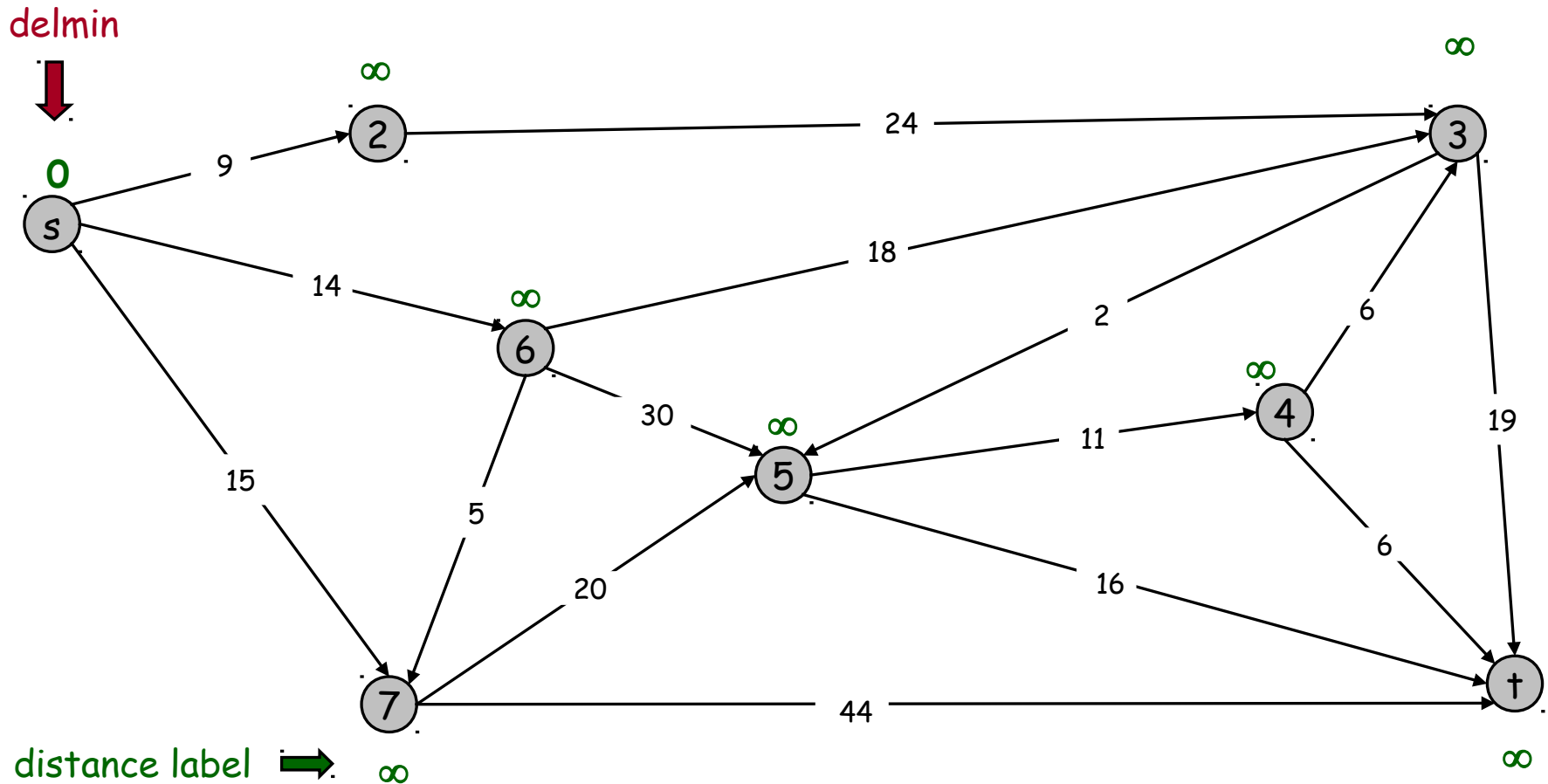
$PQ = \{ s, 2, 3, 4, 5, 6, 7, t \}$



Dijkstra's Shortest Path Algorithm

$S = \{ \}$

$PQ = \{ s, 2, 3, 4, 5, 6, 7, t \}$



Dijkstra's Shortest Path Algorithm

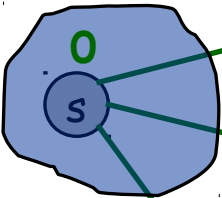
$S = \{s\}$

$PQ = \{2, 3, 4, 5, 6, 7, t\}$

decrease key



~~9~~ 9



9



24

∞



14



~~14~~ 14

18

30

∞



2

6

∞



15



5

20

11

16

44

19



∞

distance label



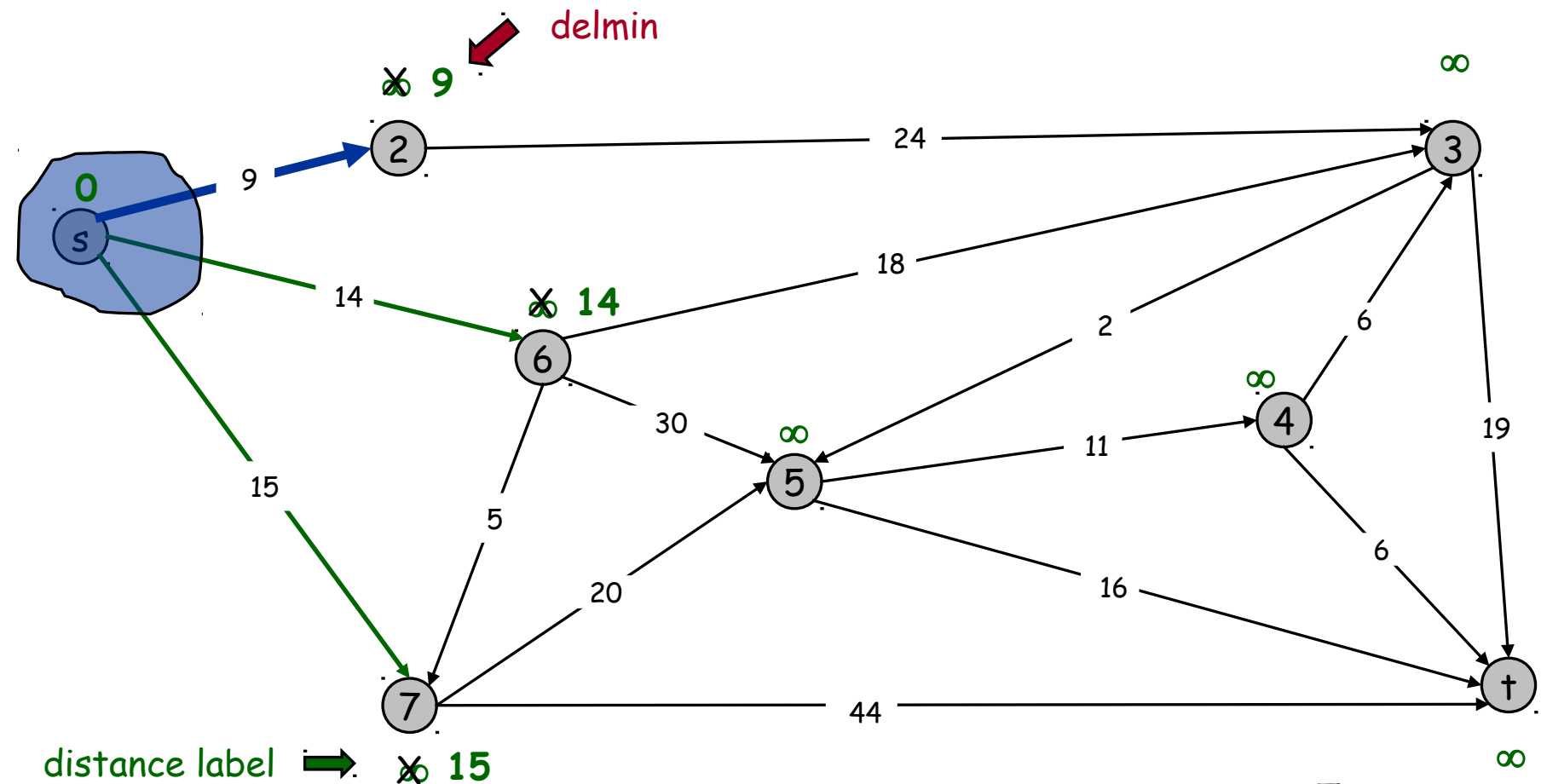
~~15~~ 15

4

Dijkstra's Shortest Path Algorithm

$S = \{s\}$

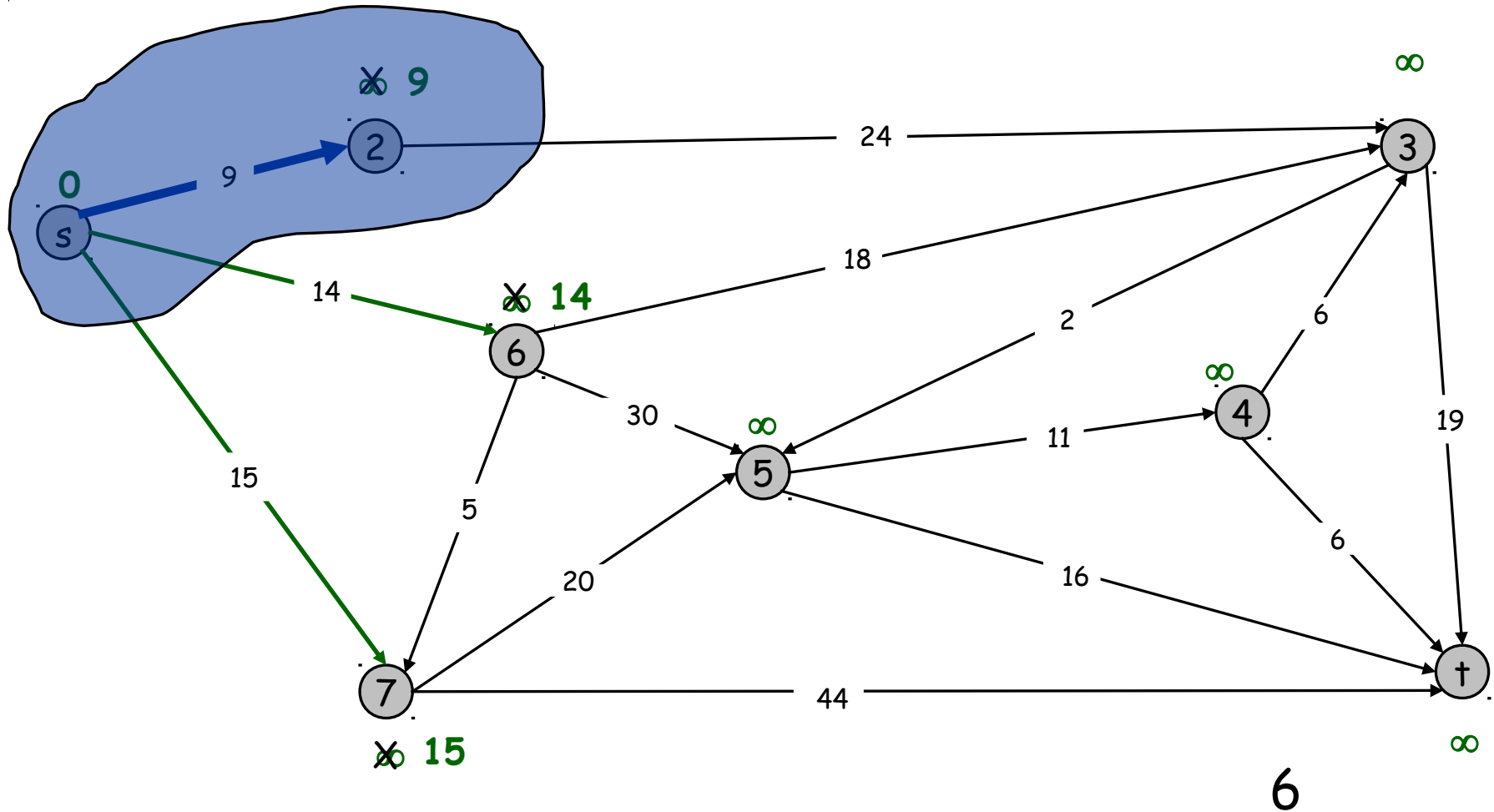
$PQ = \{2, 3, 4, 5, 6, 7, \dagger\}$



Dijkstra's Shortest Path Algorithm

$S = \{s, 2\}$

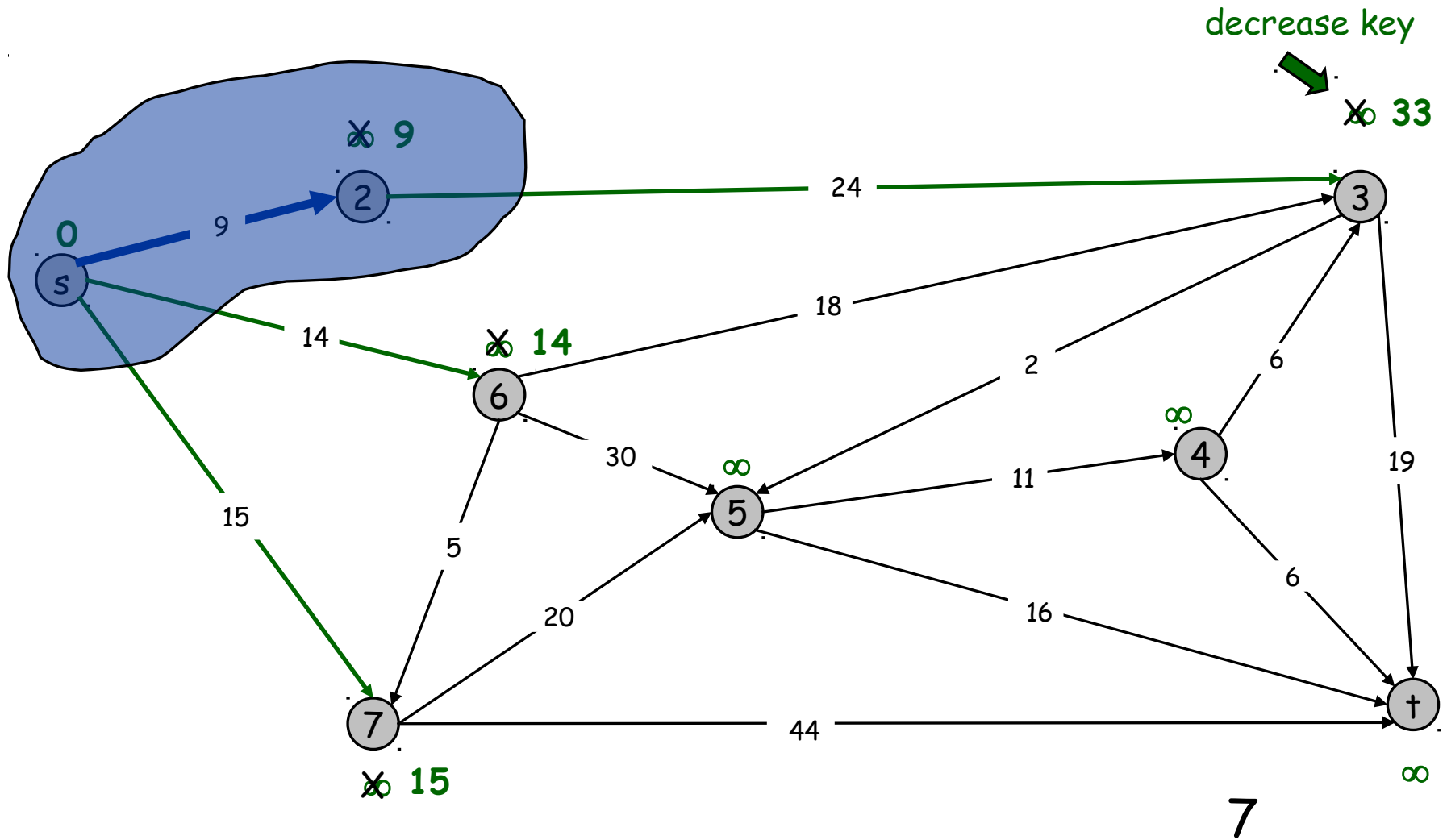
$PQ = \{3, 4, 5, 6, 7, t\}$



Dijkstra's Shortest Path Algorithm

$S = \{s, 2\}$

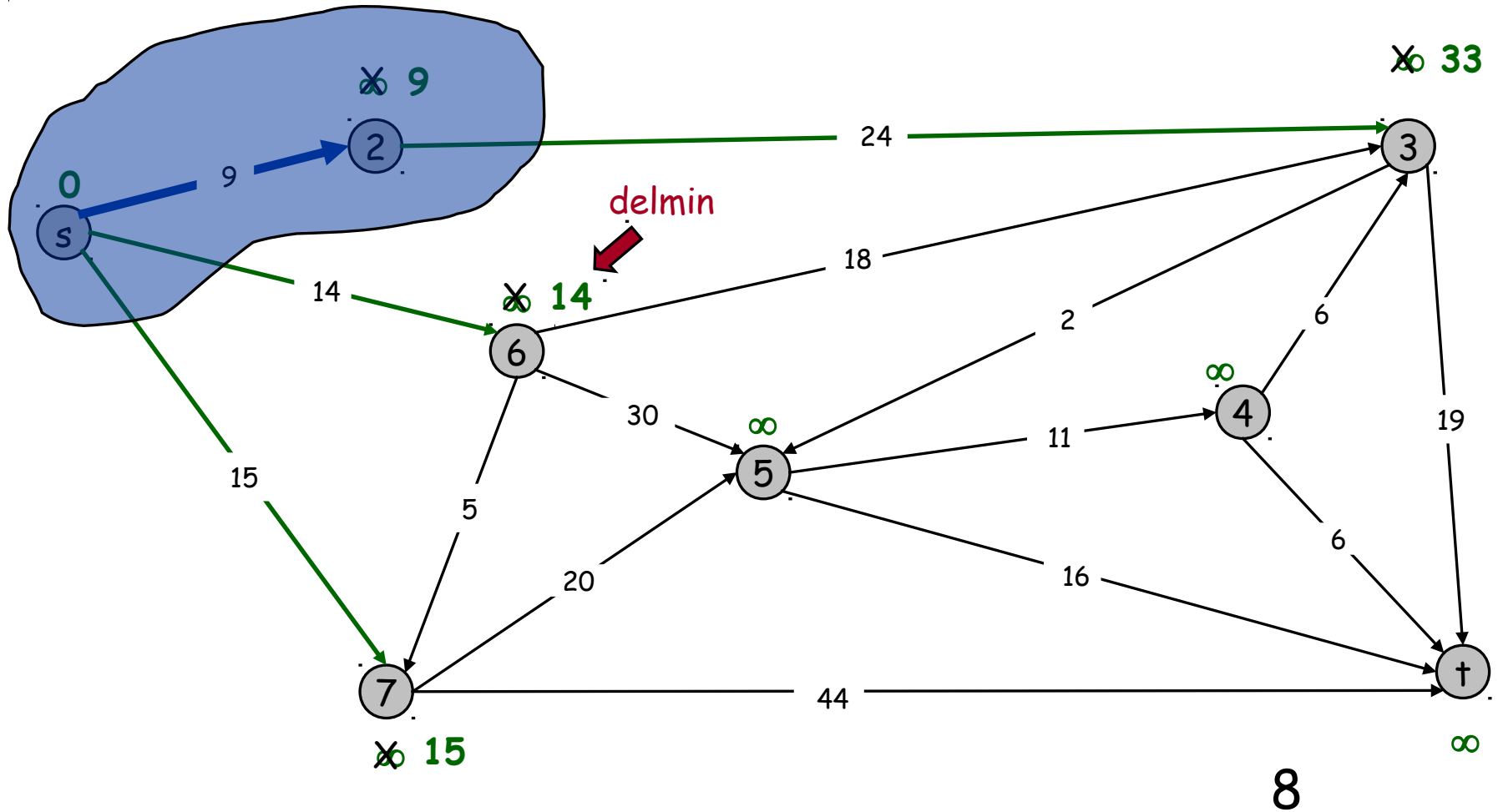
$PQ = \{3, 4, 5, 6, 7, \dagger\}$



Dijkstra's Shortest Path Algorithm

$S = \{s, 2\}$

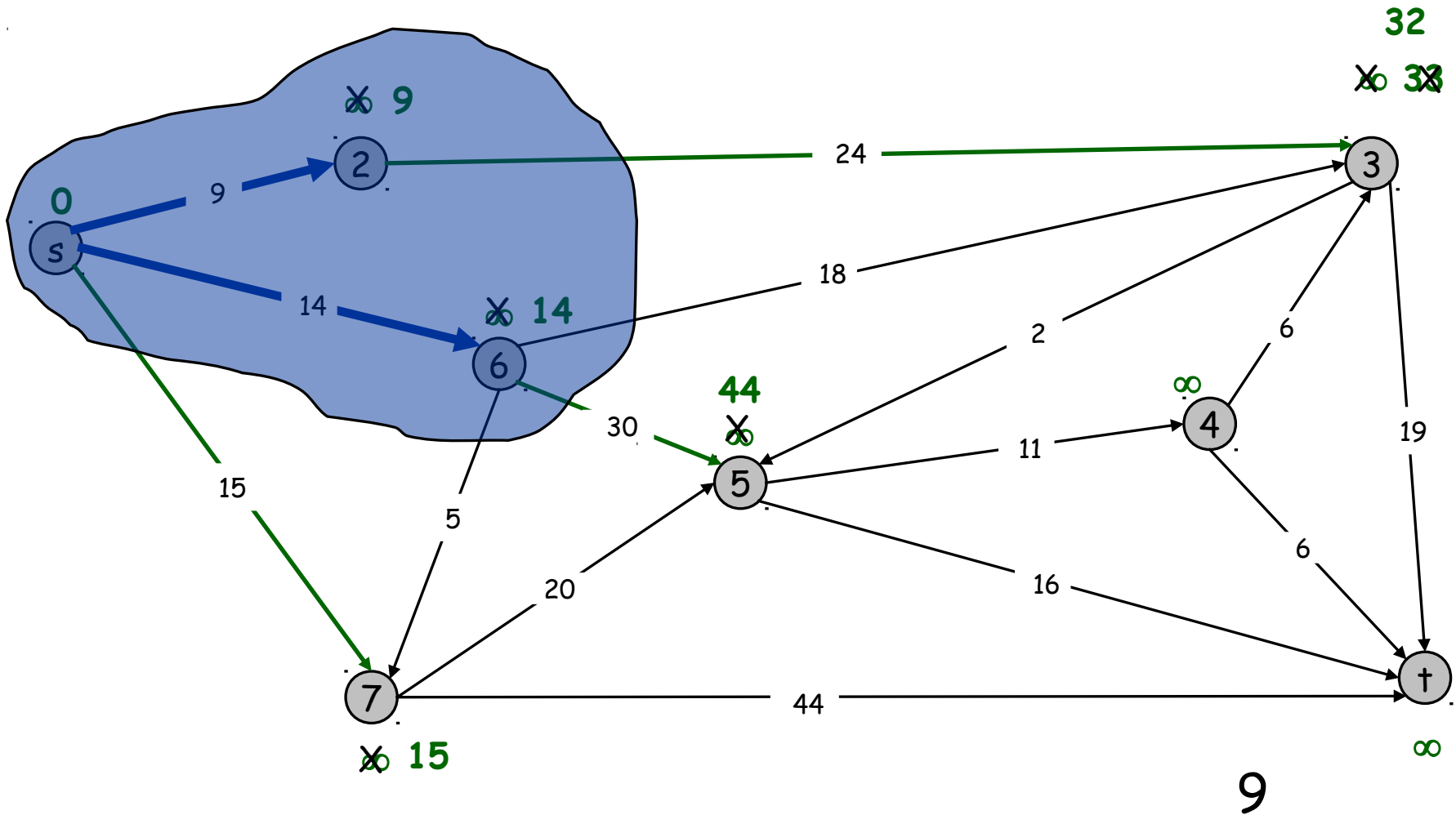
$PQ = \{3, 4, 5, 6, 7, \dagger\}$



Dijkstra's Shortest Path Algorithm

$S = \{s, 2, 6\}$

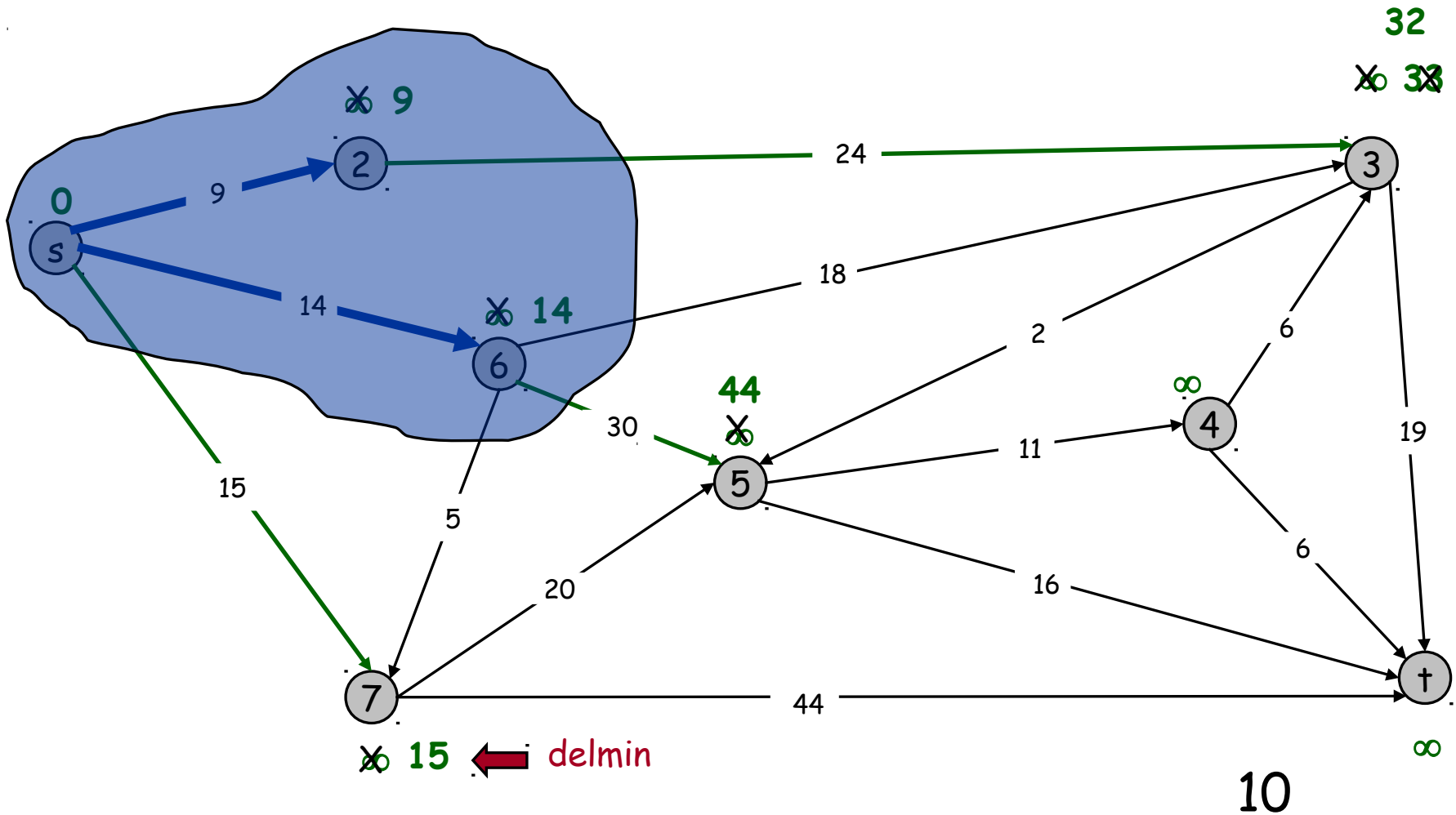
$PQ = \{3, 4, 5, 7, \dagger\}$



Dijkstra's Shortest Path Algorithm

$S = \{s, 2, 6\}$

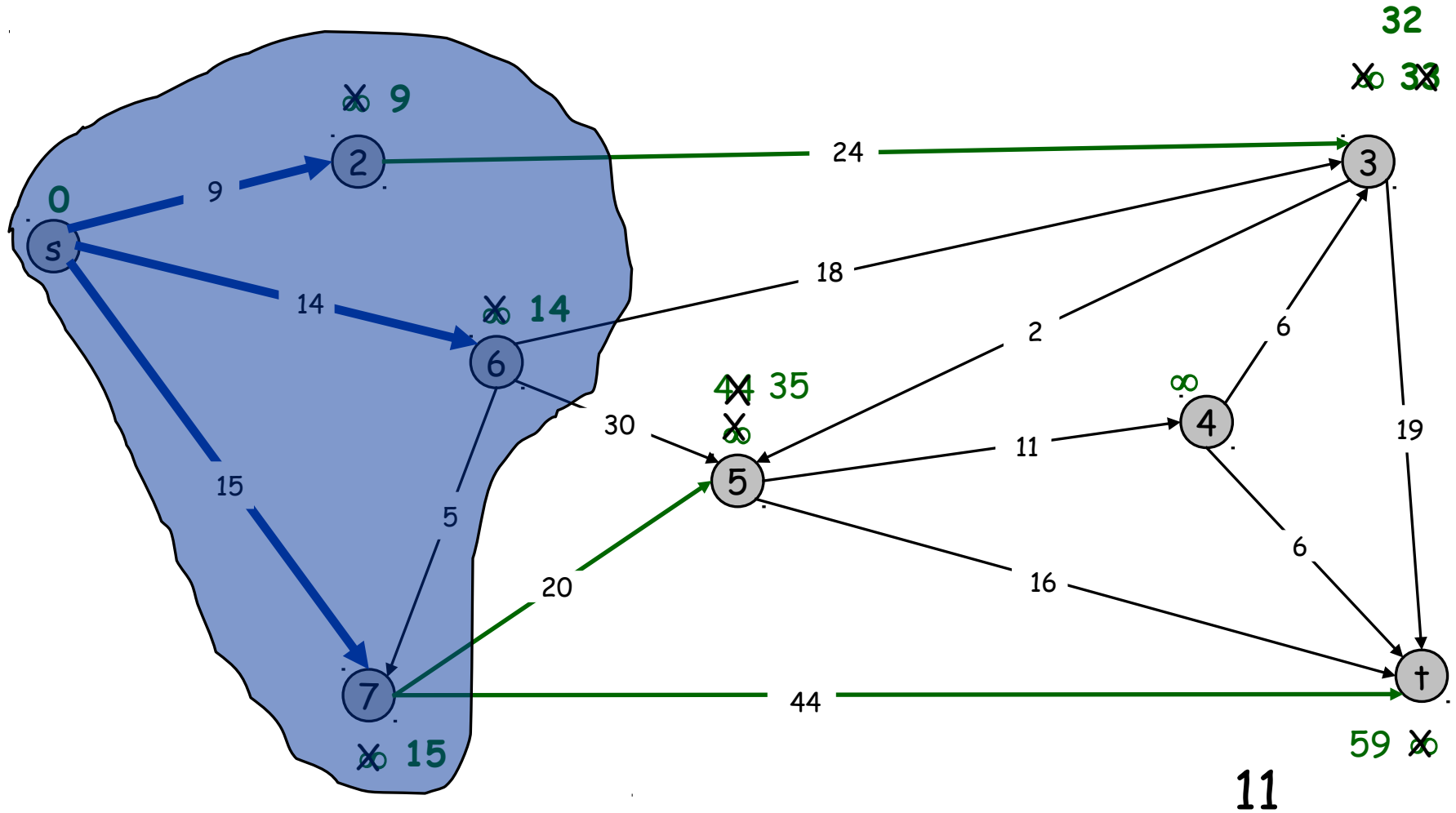
$PQ = \{3, 4, 5, 7, \dagger\}$



Dijkstra's Shortest Path Algorithm

$S = \{s, 2, 6, 7\}$

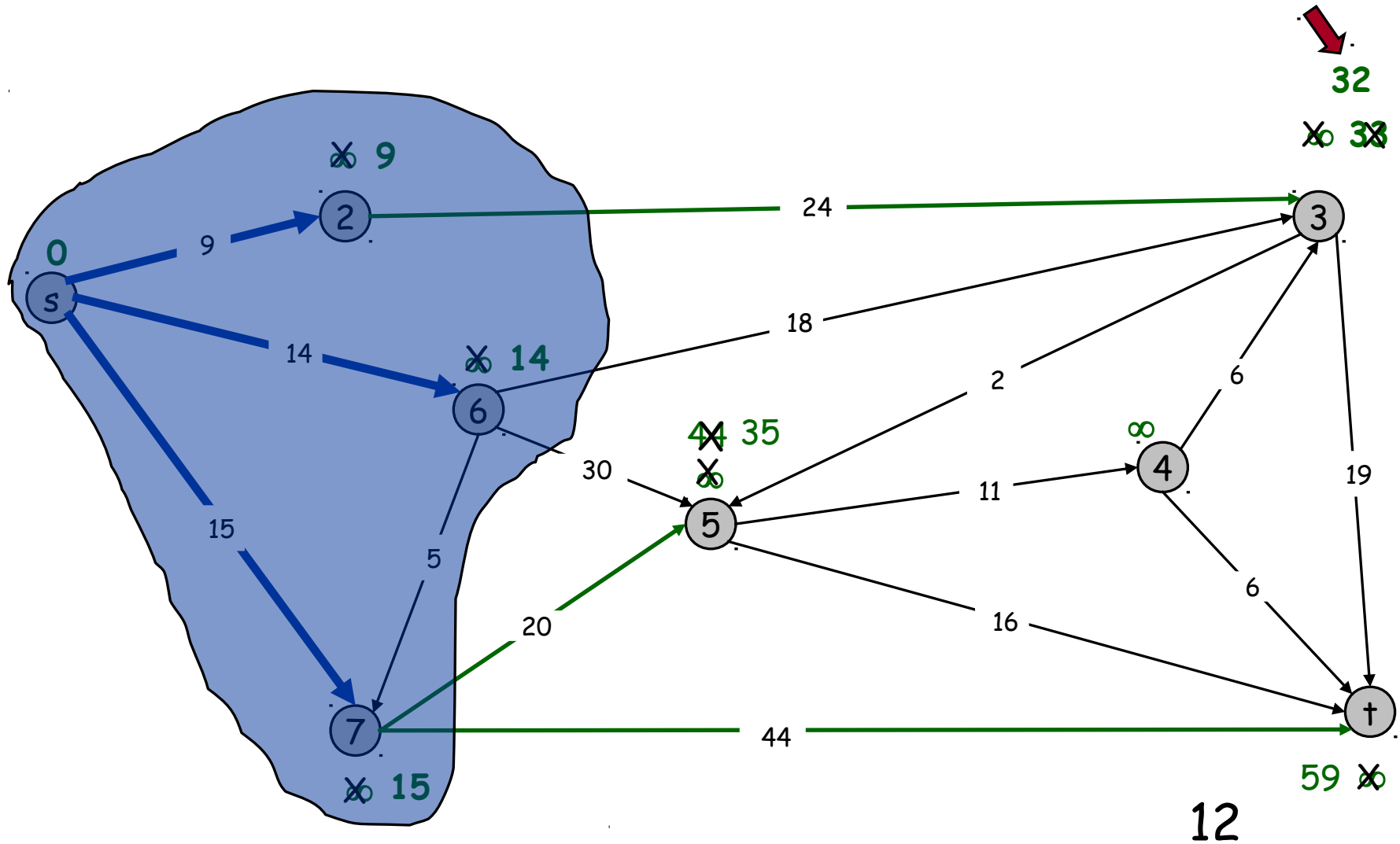
$PQ = \{3, 4, 5, t\}$



Dijkstra's Shortest Path Algorithm

$S = \{s, 2, 6, 7\}$

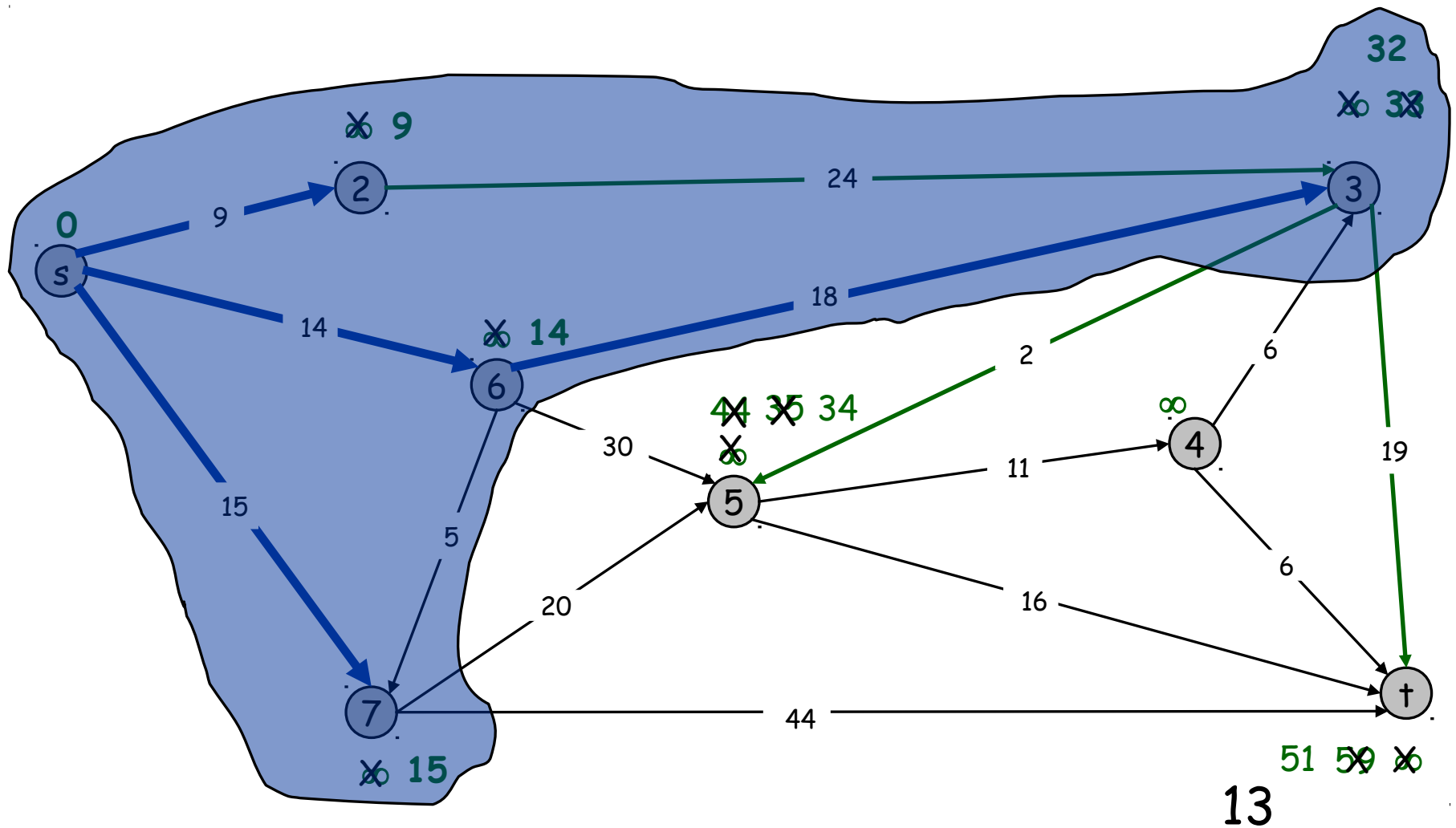
$PQ = \{3, 4, 5, \dagger\}$



Dijkstra's Shortest Path Algorithm

$S = \{s, 2, 3, 6, 7\}$

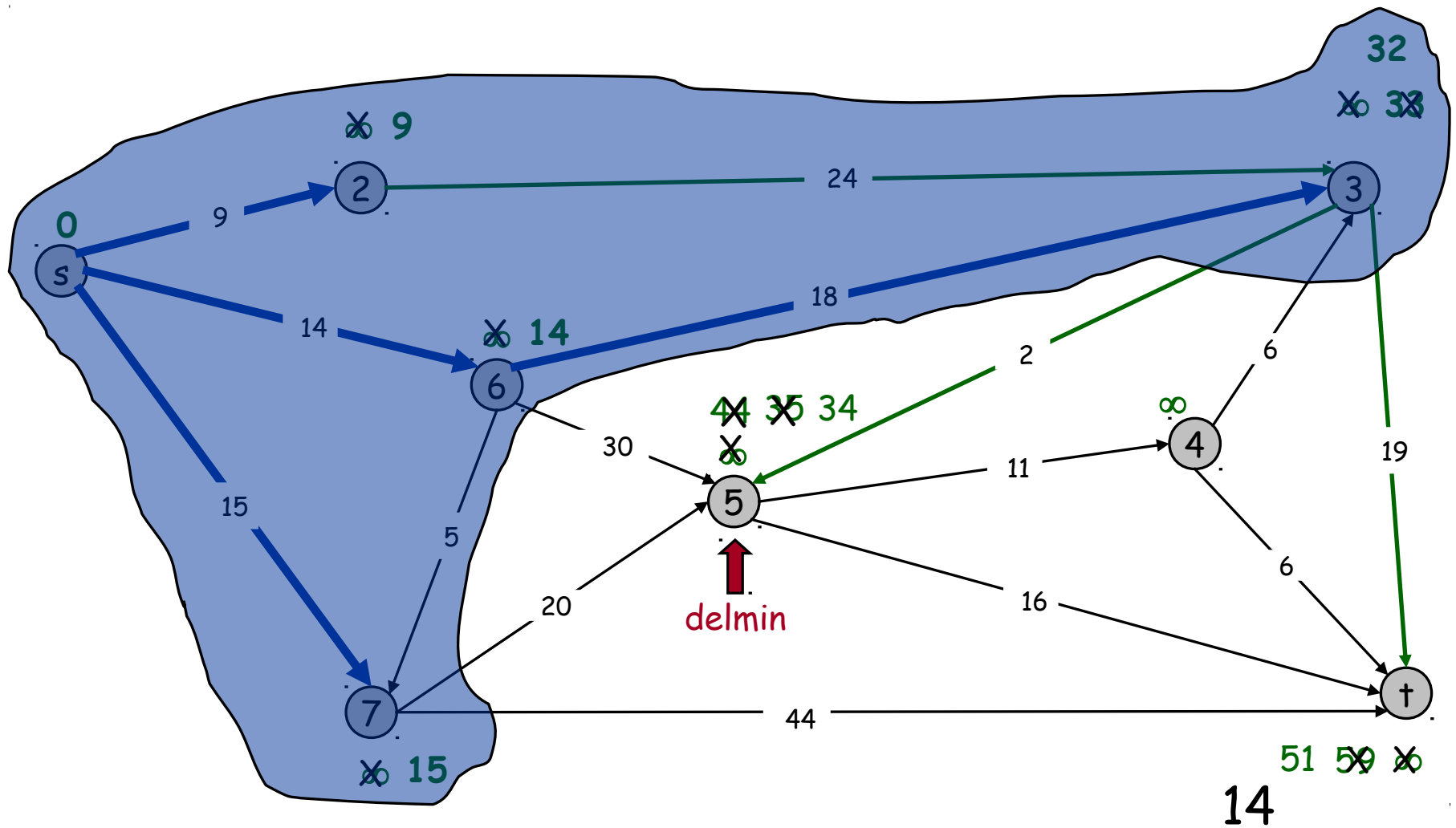
$PQ = \{4, 5, \dagger\}$



Dijkstra's Shortest Path Algorithm

$S = \{s, 2, 3, 6, 7\}$

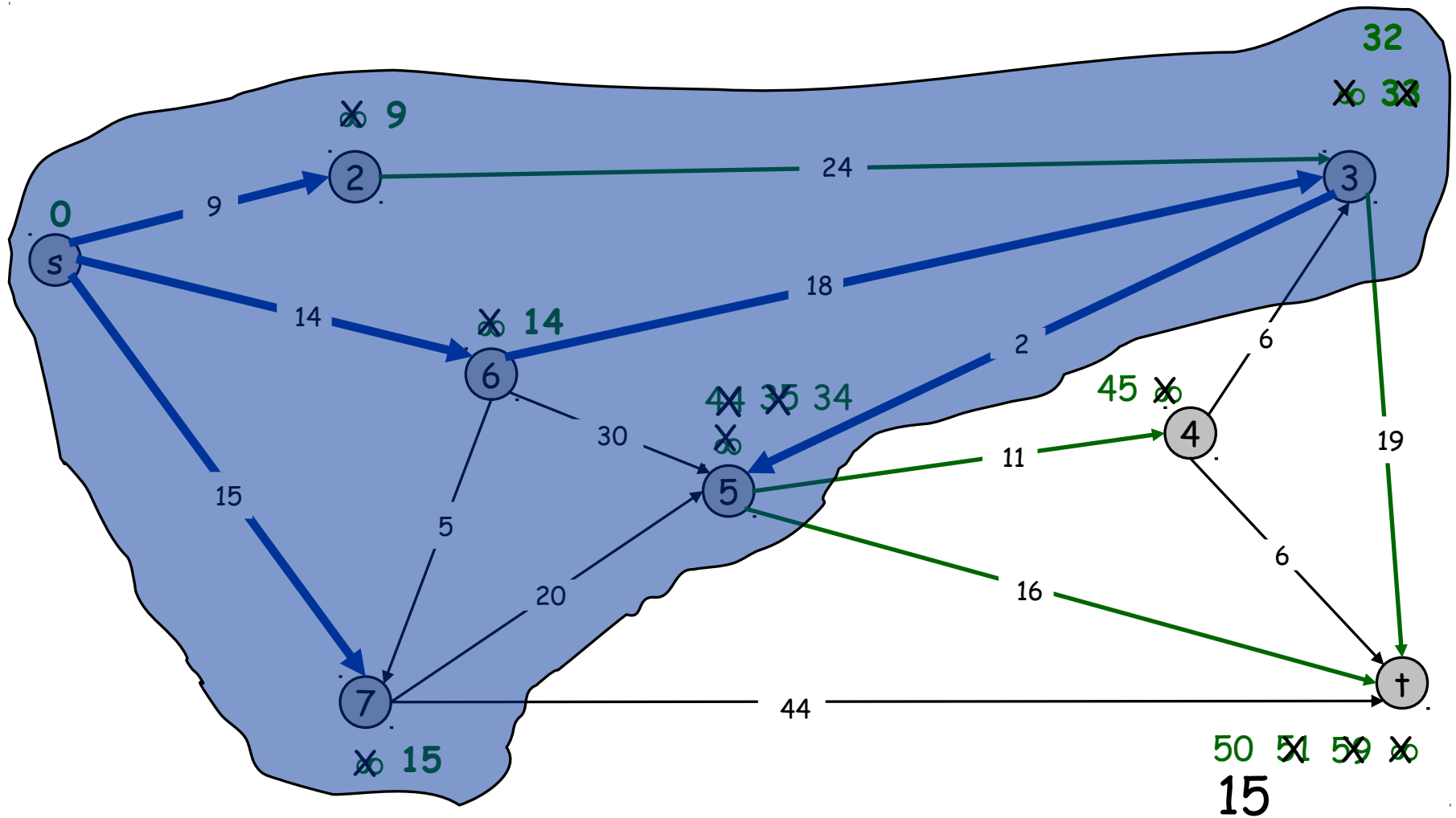
$PQ = \{4, 5, \dagger\}$



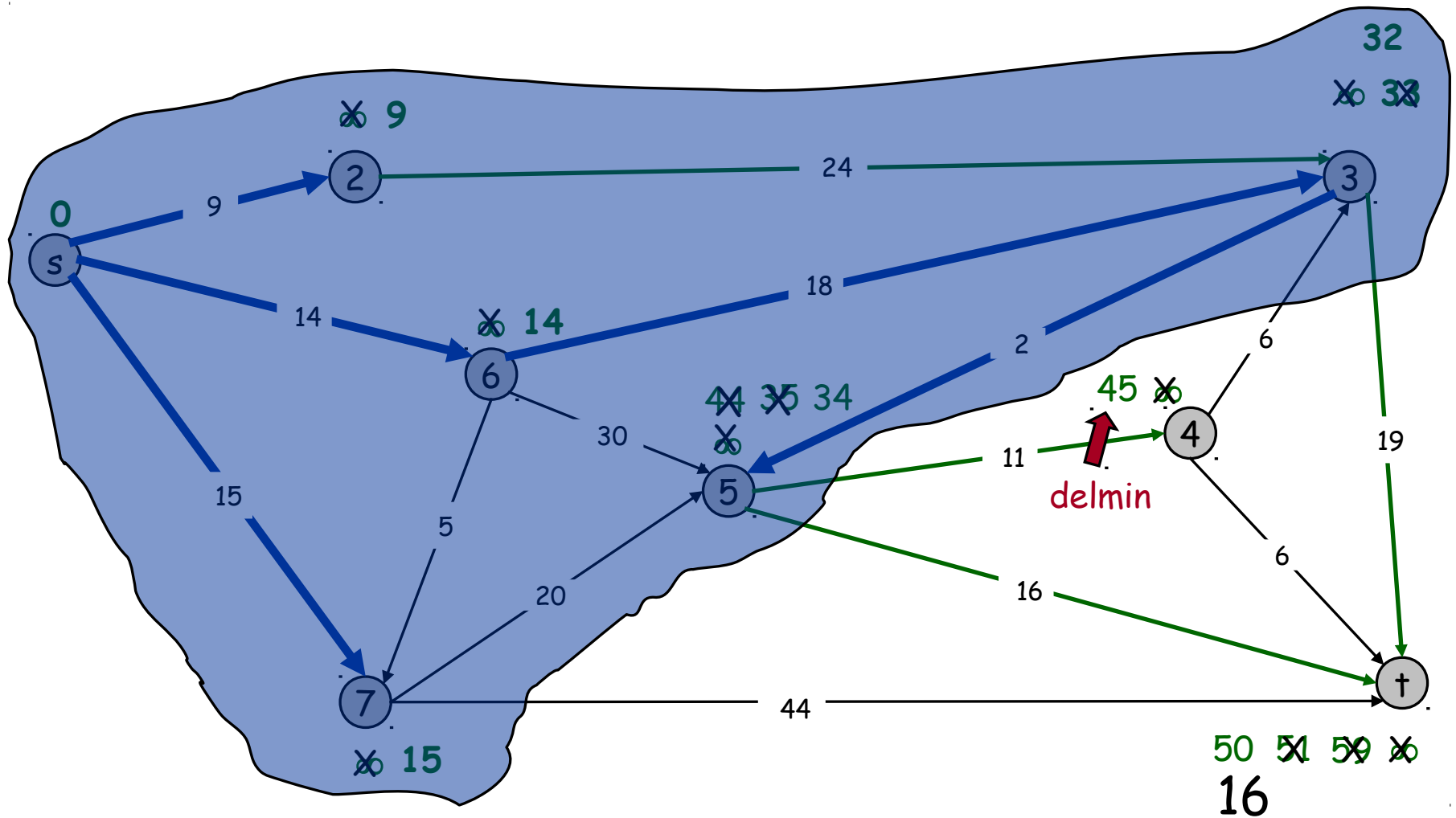
Dijkstra's Shortest Path Algorithm

$S = \{s, 2, 3, 5, 6, 7\}$

$PQ = \{4, t\}$



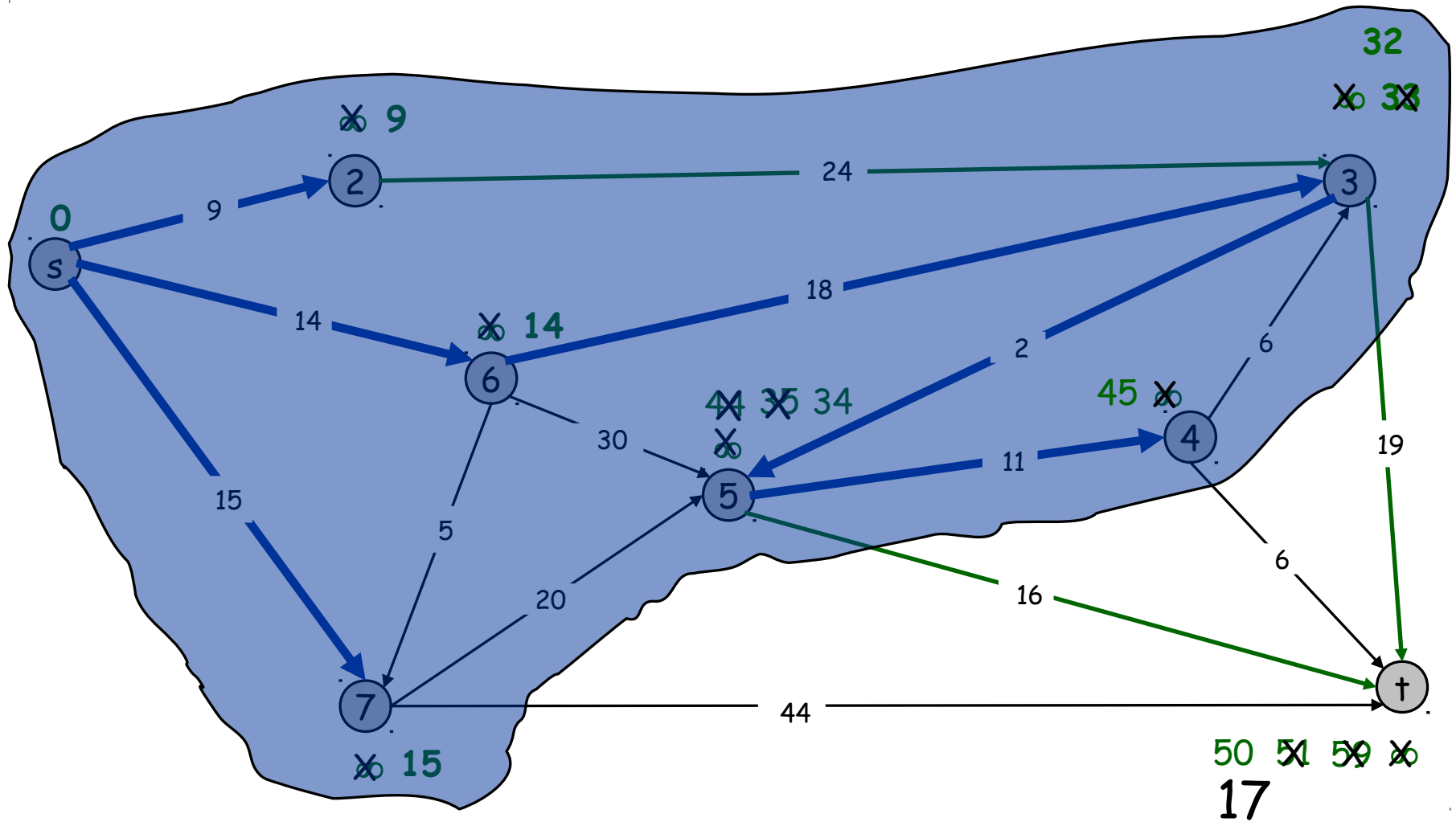
Dijkstra's Shortest Path Algorithm

$$S = \{s, 2, 3, 5, 6, 7\}$$
$$PQ = \{4, +\}$$


Dijkstra's Shortest Path Algorithm

$S = \{s, 2, 3, 4, 5, 6, 7\}$

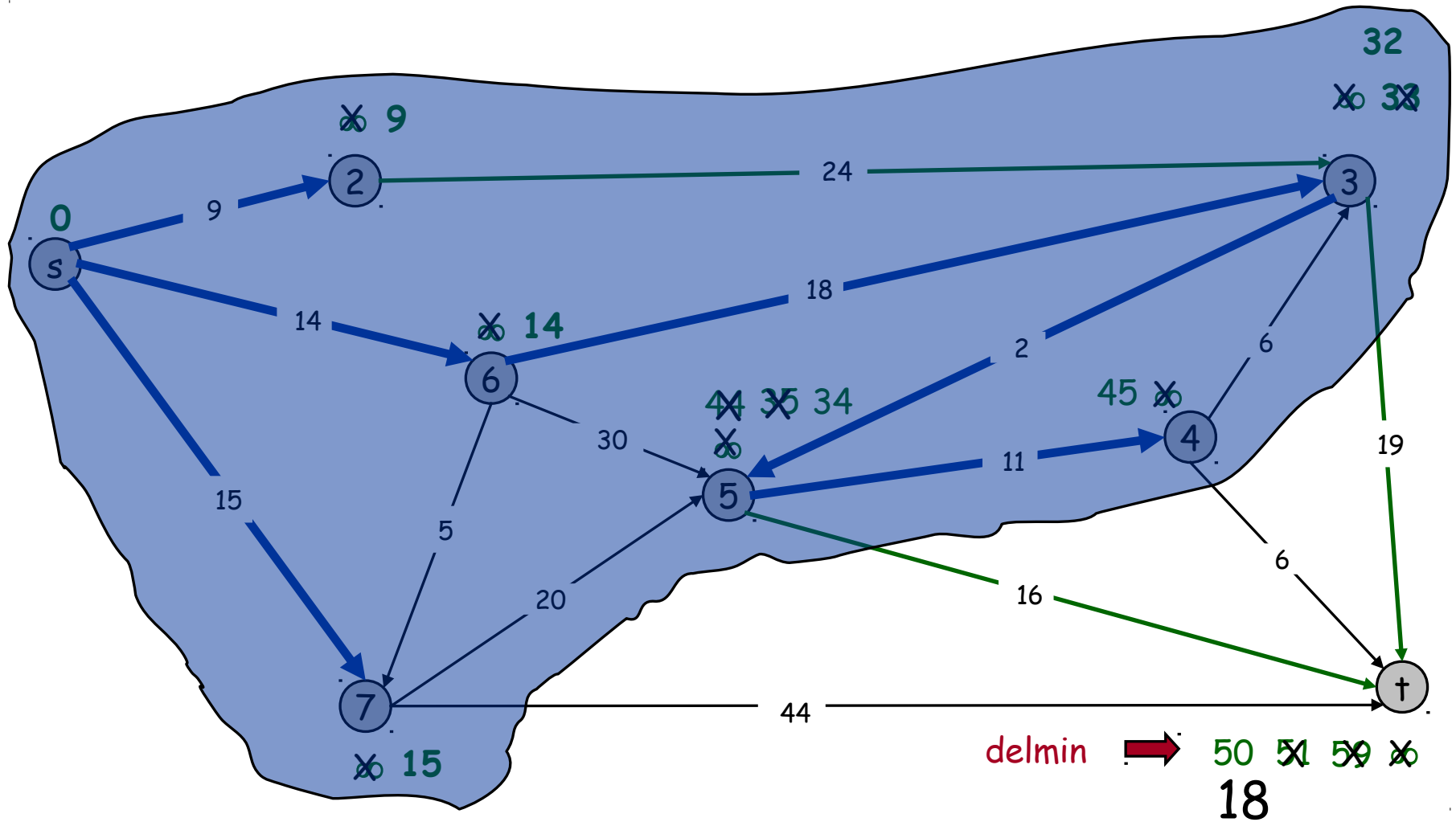
$PQ = \{t\}$



Dijkstra's Shortest Path Algorithm

$S = \{s, 2, 3, 4, 5, 6, 7\}$

$PQ = \{t\}$



Dijkstra's Shortest Path Algorithm

$S = \{s, 2, 3, 4, 5, 6, 7, t\}$

$PQ = \{\}$

