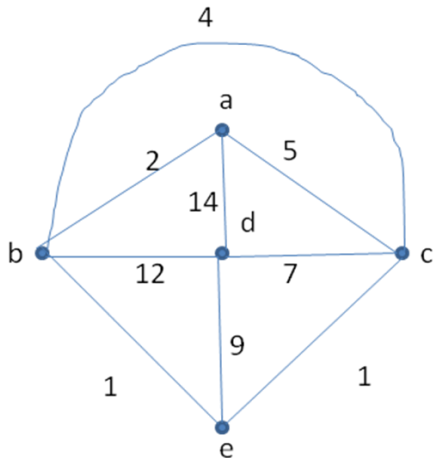
1. Run-times

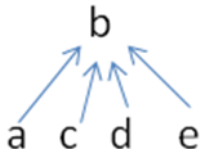
	Run-time
Kruskal's MST	$\|E\| \log\|V\|$
Dijkstra's	$\|E\| \log\|V\| + \|V\| \log \|V\|$ or $\|V\|^2$
Topological sort	$\|V\| + \|E\|$

2. Graphs

a. Draw the following graph: V={a,b,c,d,e }
E={(a,b):2, (a,c): 5, (a,d): 14, (b,c): 4, (b,d): 12, (b,e): 1, (c,d): 7, (c,e): 1, (d,e): 9}
where (x,y):z represents an undirected edge between x & y with weight z.



b. Find a minimal spanning tree using Kruskal's algorithm.
Only the final table & up-tree are shown here:
Table of edges by weights:
1: (b,e) - accepted
1: (c,e) -accepted
2: (a,b) - accepted
4: (b,c) - rejected
5: (a,c) - rejected
7: (c,d) - accepted
9: (d,e)
12: (b,d)
14: (a,d)



c. Find the shortest path from a to each vertex using Dijkstra's algorithm.

	Known	Cost	Path
a	Y	0	-
b	Y	2	a
c	Y	5	a
d	Y	12	e
e	Y	3	b

d. Dijkstra's algorithm does not necessarily work when the graph possesses negative weights. Will Kruskal's algorithm work with negative weights?

Yes – negative weights won't cause any errors in Kruskal's algorithm.