

# MATH221 Mathematics for Computer Science

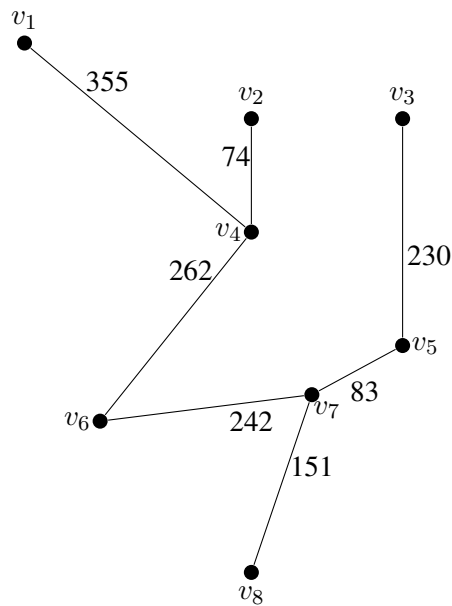
## Tutorial Sheet Week 13 Solutions

Autumn 2017

1. Kruskal's Algorithm gives:

Edge	Weight	Will adding edge make a circuit?	Action taken	Cumulative Weight of subgraph
$(v_2, v_4)$	74	no	added	74
$(v_5, v_7)$	83	no	added	157
$(v_7, v_8)$	151	no	added	308
$(v_3, v_5)$	230	no	added	538
$(v_6, v_7)$	242	no	added	780
$(v_4, v_6)$	262	no	added	1042
$(v_4, v_7)$	269	yes	not added	1042
$(v_3, v_7)$	306	yes	not added	1042
$(v_2, v_7)$	348	yes	not added	1042
$(v_1, v_4)$	355	no	added	1397

So a minimum spanning tree is



Prim's Algorithm gives:

Vertex added	Edge added	Weight	Cumulative weight
$v_1$			
$v_4$	$(v_1, v_4)$	355	355
$v_2$	$(v_2, v_4)$	74	429
$v_6$	$(v_4, v_6)$	262	691
$v_7$	$(v_6, v_7)$	242	933
$v_5$	$(v_5, v_7)$	83	1016
$v_8$	$(v_7, v_8)$	151	1167
$v_3$	$(v_3, v_5)$	230	1397

So a minimum spanning tree is

