22.

Here is a counter example of G: It has two edges with the same weight, not distinct

1

2 2

0 2

1

The following set is not MST: {10, 12}: doesn’t belong to MST which is a counter example

However, the set {10, 02} and {02, 12} are MST

25

28.

For part i, perform the regular kruskal’s algorithm except that we should check if a visited node has labeled x or not, at the end if there was not MST, return false

Variable to count label with X

For each node in the graph

Select edges in an increasing order from the beginning

If edge is not labeled X

Continue the loop

Endif

Check if the selected edge is creating a cycle or not

minCost+=cost;

do the union

increment the count variable

Endif

Endfor

If count variable is equal to K return true

Otherwise return false

30