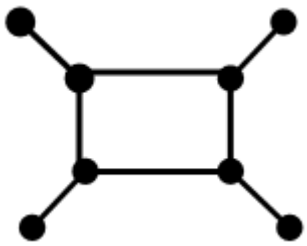
Q1
1 Point

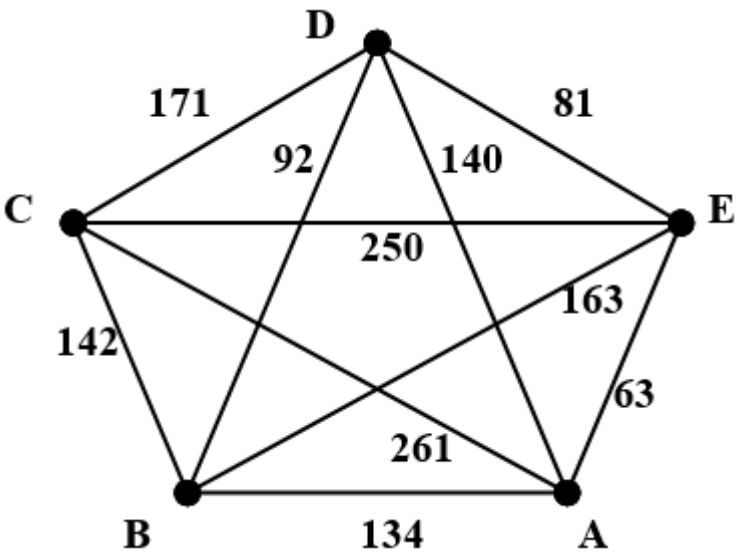
How many spanning trees does the following graph have?



4

Q2
2 Points

Consider the following graph and answer the corresponding questions



Q2.1
1 Point

Using Kruskal's algorithm, which edge should you choose second?

DE

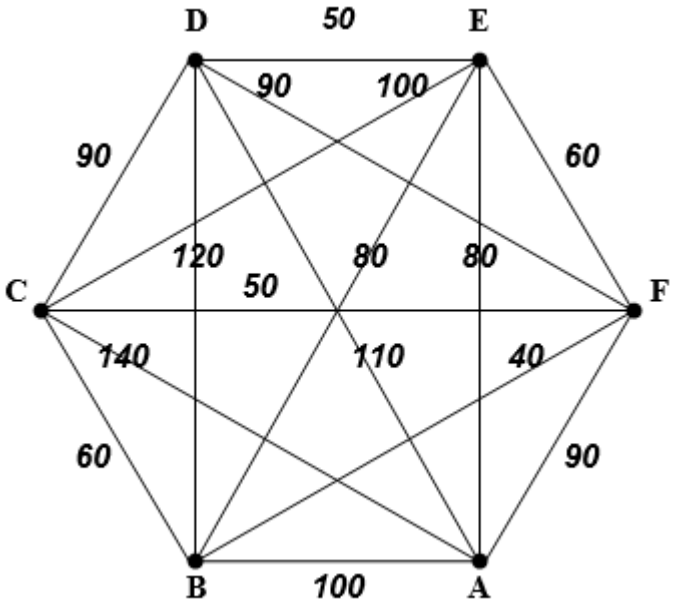
Q2.2
1 Point

Using Kruskal's algorithm, which edge should you choose fourth?

BC

Q3
8 Points

Using the provided graph, answer the following questions

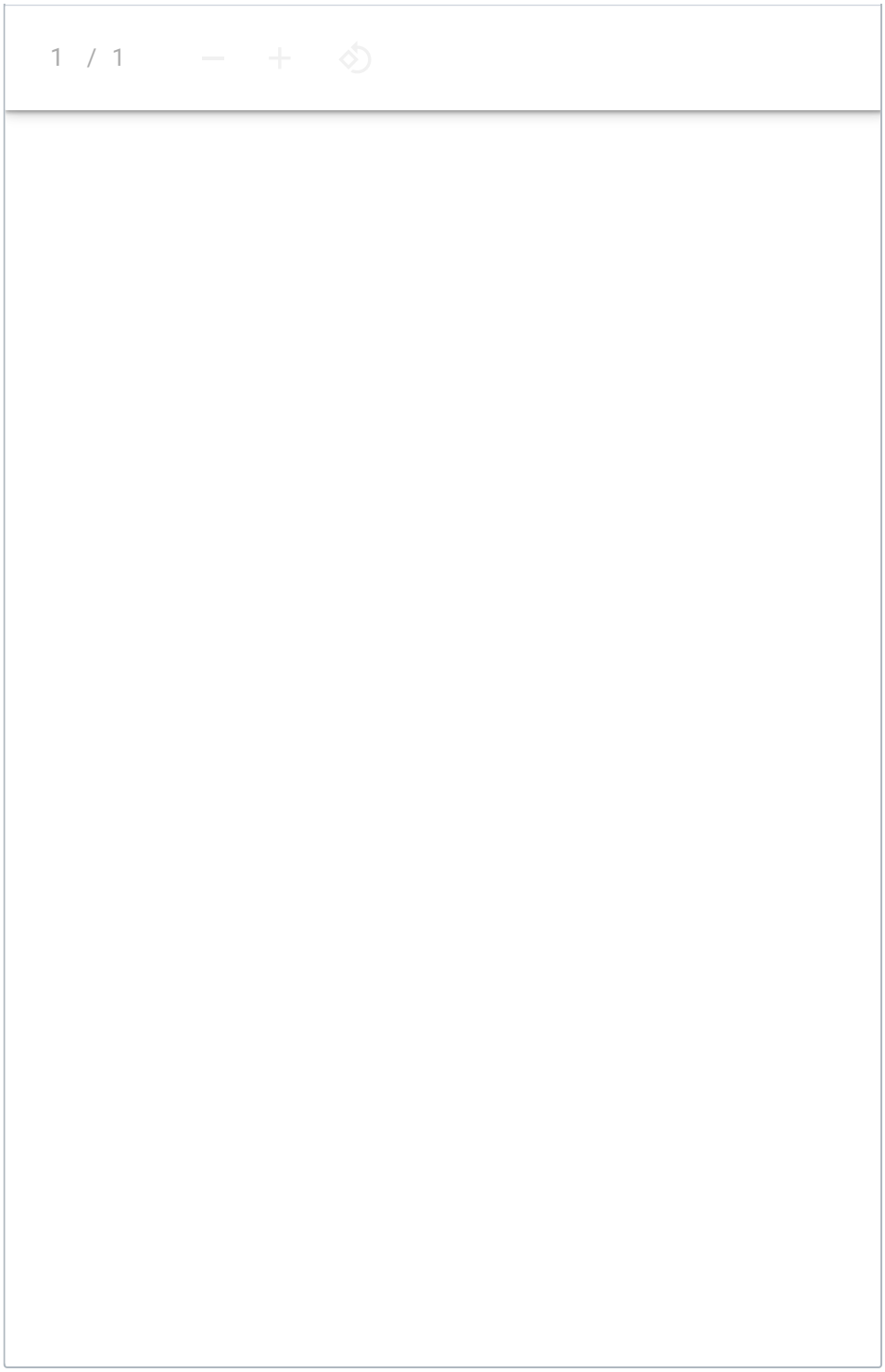


Q3.1
3 Points

Provide the MST generated using Kruskal's algorithm showing the order with which edges were added in

Q3.1.pdf Download

1 / 1

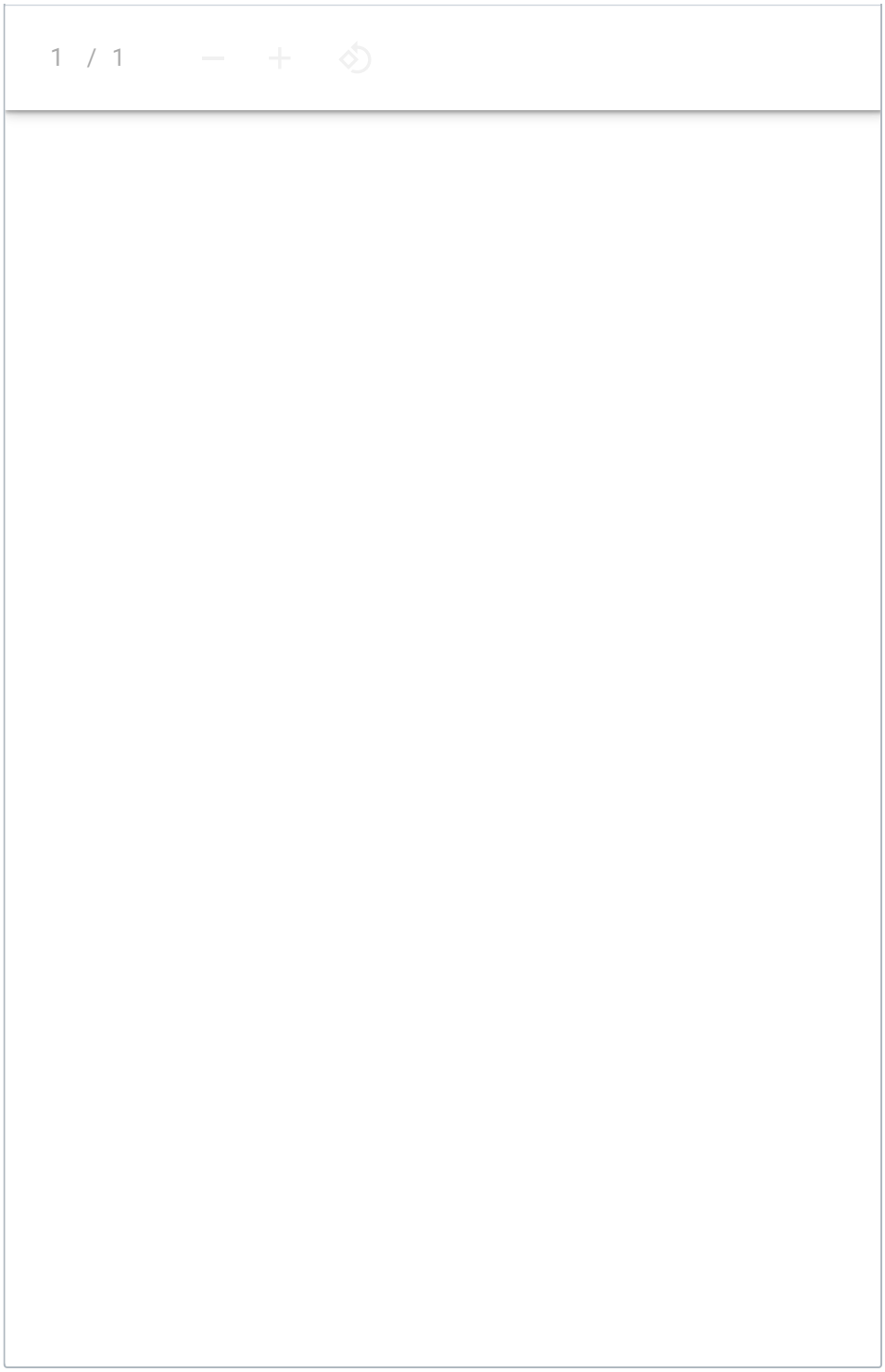


Q3.2

3 Points

Provide the MST generated using Prim's algorithm showing how the order of which edges were added in step by step

▾ Q3.2.pdf Download



Q3.3
2 Points

Provide the overall weight of the MST generated from the following graph using Kruskal's algorithm

280

Q4

4 Points

Consider a graph G, where each of the edges have different weights.

Let T_1 be the minimum-weight spanning tree produced by Kruskal's Algorithm, and let T_2 be the minimum-weight spanning tree produced by Prim's Algorithm.

I claim that T_1 and T_2 must be identical spanning trees - i.e., the exact same set of edges must appear in both trees.

Determine whether this claim is TRUE or FALSE.

If your answer is TRUE, see if you can figure out why the claim is true. If your answer is FALSE, see if you can come up with a counterexample.

I don't believe the answer is True.
Let's assume that if the MST is not unique, and then the result will be different. Because we can start any order of the starting vertex of the graph. But, when the graph is weighted and undirected, the total weights could be the same.

Counterexample:
If we have two triangles graph and thus ,we will have three nodes and three edges. At the same time, each edge has the same weight. So, we can get a MST from any 2 edges of this graph.
On the other hand, Prime or Kruskal's algorithm will have different idea and solutions when we choose to get the MST on this triangle graph. I mean, it will depend on either algorithm or our solutions.

Quiz 4-MST

GRADED

STUDENT

Kejian Tong

TOTAL POINTS

13 / 15 pts

QUESTION 1

(no title) **1** / 1 pt

QUESTION 2

(no title) **2** / 2 pts

2.1 (no title) **1** / 1 pt

2.2 (no title) **1** / 1 pt

QUESTION 3

(no title) **8** / 8 pts

3.1 (no title) **3** / 3 pts

3.2 (no title) **3** / 3 pts

3.3 (no title) **2** / 2 pts

QUESTION 4

(no title) **2** / 4 pts