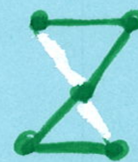
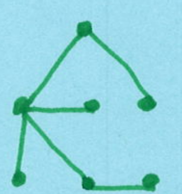
MAT 100 Homework #12 Key

1. a.  answers will vary

b.  answers will vary

c.  answers will vary

2a. not a tree
5 vertices
9 edges − 4 (for tree) = 5 redundancy

b. tree

c. not a tree (taken by itself)
10 vertices
11 edges − 9 (need for tree) = 2 redundancy

d. not a tree
5 vertices
5 edges − 4 (for a tree) = 1 redundancy

c. alt. bottom graph taken as one (given the numbering)
not connected

3. a. efficient − easy to calculate
b. optimal − always produces the smallest/cheapest tree

4a. 4+9+18+19+21+22+23+30 = 146

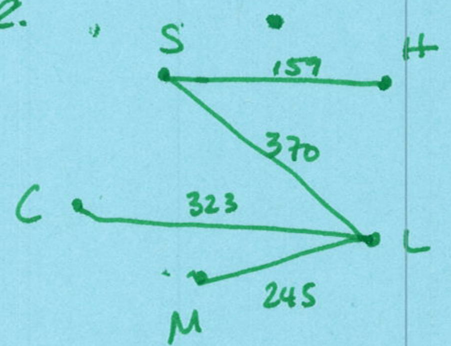
b. 1+1+2+2+3+4+4+4 = 21

See next page

c. 1+2+7+13+16 = 39

d. 2+3+4+5+6+7+9+11+16 = 63

e.



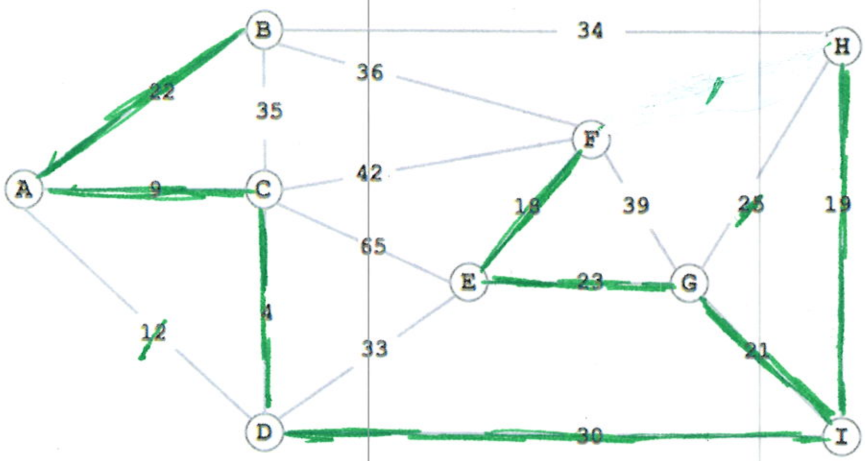
159 + 370 + 245 + 323 = 1097

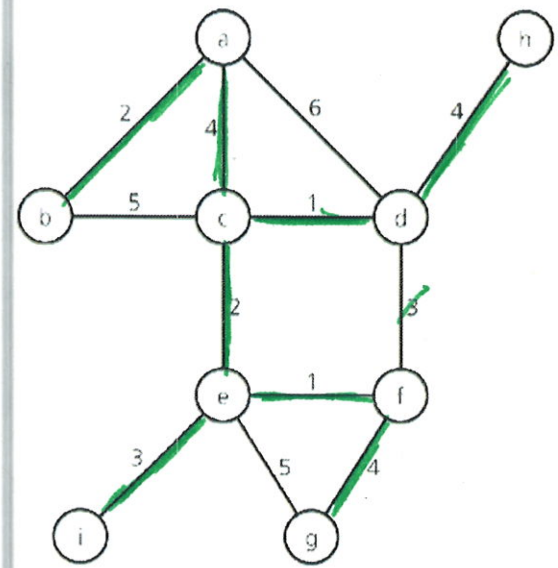
5. contains no circuit
n vertices, n-1 edges
connected

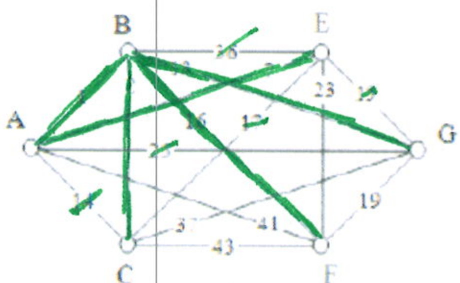
6. 15+20+25+30+45+75+90 = 300 see next page

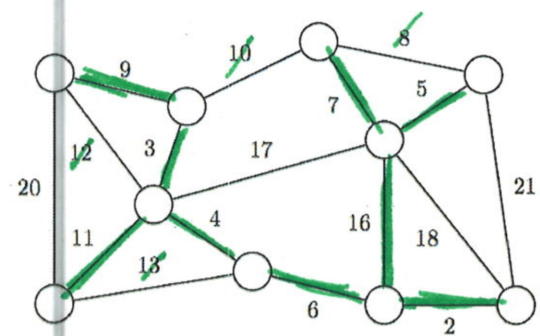
7. if the weight represent bandwidth instead of cost or profit
answers may vary

8. So that the network is still connected if a portion goes down





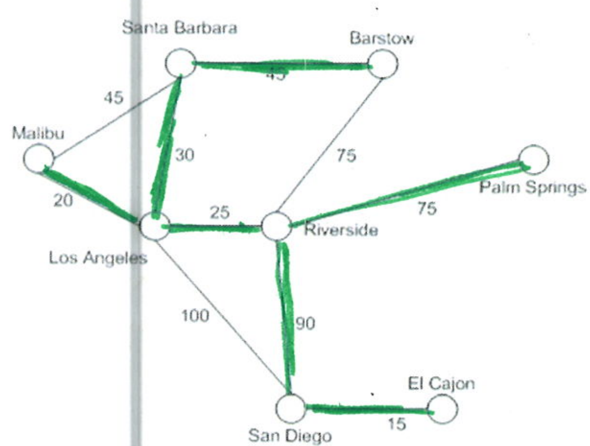




	Seattle	Honolulu	London	Moscow	Cairo
Seattle	-	159	370	654	684
Honolulu		-	830	854	801
London			-	245	323
Moscow				-	329
Cairo					-

5. What are the three main properties of trees?

6. Find a Maximum Spanning Tree for the graph to the right.



7. Describe some reasons why you might want a maximum spanning tree instead of a minimal spanning tree?

8. If a spanning tree is all that is necessary for a network to function, why might someone want to build redundancy into the system?