



# MAT 100 Homework #12 Key

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

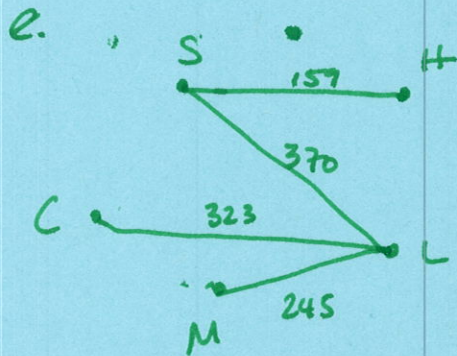
(2)

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

See next page

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

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



$$159 + 370 + 245 + 323 = 1097$$

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