MA1020 Quantitative Literacy – Chapter 6 Quiz

Solutions

December 4, 2006

Use the following graph for questions 1 & 2.



- 1. Which of the following are adjacent vertices?
 - (a) 4 and 5
 - (b) 1 and 5 $\,$
 - (c) 2 and 3
 - (d) Both (b) and (c)
 - (e) None of the above.

d [2]

2. Find the degrees of the following vertices.

Vertex 1: degree 3 [1]

Vertex 3: degree 4 [1]

3. Consider the graph below:



Determine whether *EADBCDE* forms a path, circuit, Euler path, and/or an Euler circuit.

circuit & path [2]

4. Find three different spanning trees for the graph below and draw them. [3]



5. The cost of a direct flight between four cities is given in the table below:

	Indianapolis	Chicago	San Francisco	Dallas
Indianapolis		\$54	No direct flight available	\$388
Chicago	\$54		\$392	\$418
San Francisco	No direct flight available	\$392		\$614
Dallas	\$388	\$418	\$614	

(a) Create a weighted graph that represents this information. [3] *Solution.*



(b) Find two different routes from Indianapolis to San Francisco and calculate the cost of each.

Route 1: Indianapolis to Chicago to San Francisco [1] Cost: \$446 [1]

Route 2: Indianapolis to Dallas to San Francisco [1] Cost: \$1002 [1]

MA1020 Quantitative Literacy – Chapter 6 Quiz – Take-Home

Name _____

The following is the TAKE-HOME portion of the quiz. You are NOT to discuss this problem with anyone or work with another person for this section. If you collaborate with another person, you will automatically receive a score of zero. This take-home is due by noon sharp on *Wednesday*, *December 6, 2006*.

Recall the homework problems 6.1 # 48 and 6.2 # 42 as they will be helpful when solving the following two problems.

в

D

E

С

1. Eulerize the following graph. [4]

Solution.



2. Determine whether the following graphs are isomorphic. Explain your reasoning. [4]



Solution. The two graphs are isomorphic. One way to see this is "pull" vertex E to the left and vertex F to the right. Then rotate the graph 90°. The resulting graph will show the same relationship between vertices as the other graph. \Box