

Extra Exercises on Chapter 10

Ex. 1 A tournament is a simple directed graph such that if u and v are distinct vertices in the graph, exactly one of (u, v) and (v, u) is an edge of the graph. Assume all vertices are labeled, how many different tournaments with n vertices are there?

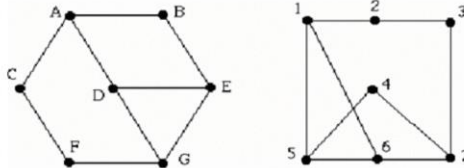
Ex. 2 If G is a planar connected graph with 20 vertices, each of degree 3, how many regions G has?



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Ex. 3 What is the length of the longest simple circuit in K_5 ?

Ex. 4 Determine whether these two graphs are isomorphic, and justify your answer.



A - 7, B - 4, C - 3, D - 6, E - 5, F - 2, G - 1



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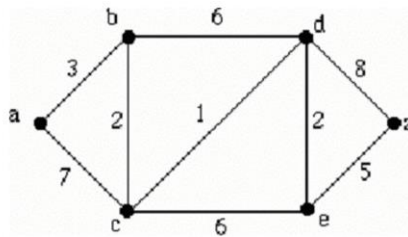
Ex. 5 The Math Department has 6 committees that meet once a month. How many different meeting times must be used to guarantee that no one is scheduled to be at meetings at the same time, if committees and their members are: $C_1 = \{\text{Allen, Brooks, Marg}\}$, $C_2 = \{\text{Brooks, Jones, Morton}\}$, $C_3 = \{\text{Allen, Marg, Morton}\}$, $C_4 = \{\text{Jones, Marg, Morton}\}$, $C_5 = \{\text{Allen, Brooks}\}$, $C_6 = \{\text{Brooks, Marg, Morton}\}$.

5. Only C_4 and C_5 can meet at the same time.



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Ex. 6 Use Dijkstra's Algorithm to find the shortest path length between the vertices a and z in this weighted graph.



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Ex. 7 Determine the truth value of the statement “A bipartite graph with an odd number of vertices does not have a Hamilton circuit,” and justify your answer.

