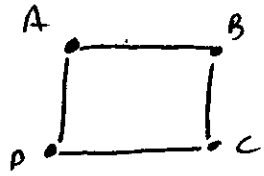
8.2c page 396-397 review 16-21 all Exercise 29-41 odd

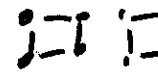
(16) An Euler cycle is a cycle in a graph that includes all edges and all vertices of the Graph

(17) The necessary and sufficient conditions that a graph have an Euler cycle is the graph must be connected and every vertex has even degree.

(18) example of Euler cycle
$A \to B \to C \to D$



(19) not Euler cycle
any non connect graph or Any graph with at least one vertex of odd degree



(20) every edge touches two vertices
∴ number of edges $= \frac{1}{2}\Sigma$ degree of vertices

(21) Yes, since $\frac{1}{2}\Sigma$ of edges is an integer, the sum of degrees must be even. ∴ odd vertices must come in pairs. odd+odd=even

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exercise

(29) connected & every vertice has degree 2. Yes Euler cycle

(31) no Euler cycle v_4 has degree 3, so does v_2, v_6, v_7

(33) Yes

(35) If n=even

K_2

K_4 

n-odd
degree is n-1 =even

When n is even
K_n has an Euler cycle

no Euler cycle
degree is n-1

8.2c exercise continued.

(37) $m=n=2$ or $m=n=1$

(39) vertices of odd degree: d, e - 2 vertices found

(41) d a b c e b d e h g d f g j h i

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(43)

oops!

(45) true: given a path $(v_i, \ldots, v_j, \ldots b, v_j, \ldots w)$ delete all $(v_i \ldots b)$

(47) true - see book for proof