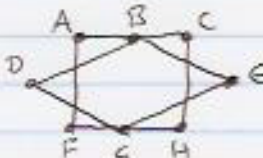


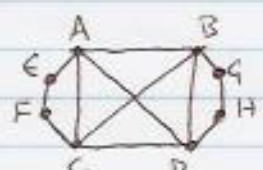
§10-1 Homework Solutions

1) a) [BB] b) 

3) a) [BB] b) Connected and all vertices even.

4) a) [BB] b) Not Eulerian since not connected

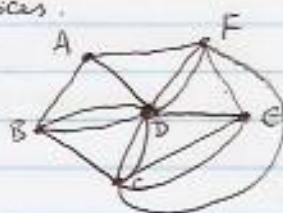
c)  eg BAFGHCBGDGEB is an Eulerian circuit

d)  eg AGFCABGHDBCD A e) No, there is a degree 5 vertex

f) Yes, find one yourself.

7 a) Yes b) No, an Eulerian trail must start and end at the only two odd vertices.

9) Draw graph as



a) No, there are odd vertices

Yes, starting or ending at A and F (the odd vertices).

10 [BB] 11) 

Not Eulerian since v_1, v_2 now odd but \exists Eulerian trail starting at v_1 , going around G_1 , returning to v_1 , going to v_2 , going around G_2 .

12) [BB] 13) a) m, n both even and > 0

b) $K_{m,n}$ has Eulerian trail $\Leftrightarrow m$ or $n = 2$ and other number is odd
 $\Leftrightarrow K_{1,2}$ or $K_{2,n}$ with n odd.

17) (Proof \Leftarrow) \exists path from u to $v \rightarrow \exists$ walk from u to v since a path is a walk.

(Proof \Rightarrow) Assume \exists a walk from u to v . If any vertex V is visited more than once on the walk there is a circuit that can be removed. Continue removing circuits until no vertex is visited twice. The resulting walk is a path. \square