# Work on these with your partner(s) at the board

1. In the Petersen graph, find

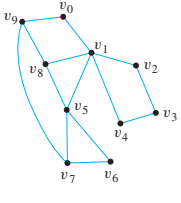
   (a) a trail of length 5  (b) a path of length 9  (c) circuits of length 5, 6, 8, and 9

   *Note: "length" means the number of edges*

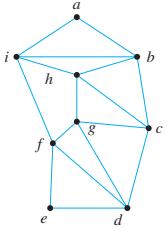
2. Prove that if $G$ has an Euler circuit, then every vertex of $G$ has even degree.

3. For each graph, find an Euler circuit or explain why one does not exist.

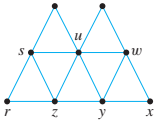
(a)



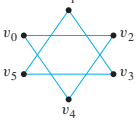

(b)




(c)




(d)

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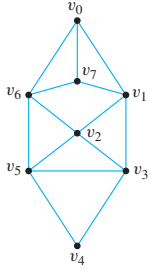
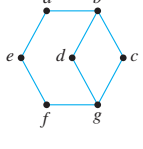
4. For each graph in #3, find an Hamiltonian circuit or explain why one does not exist.

5. For each graph, find an Hamiltonian circuit or explain why one does not exist.

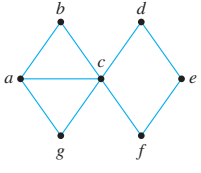
(a)




(b)




(c)




(d)