Discrete Mathematics (SC612)
Tutorial 7
3^{rd} December, 2021

1. Construct a graph that is:
   (a) Neither bipartite nor Eulerian
   (b) Bipartite but not eulerian
   (c) Eulerian but not bipartite
   (d) Both bipartite and eulerian
2. Consider a graph that has longest trail length 7. What are all the possible trail lengths in such a graph?
3. Consider a graph that has longest trail length 7. What are the possible values of the length of a longest path in this graph?
4. What are the two possible values for the longest walk in a graph?
5. Which of the following statements are true and which are false? For the true statements give proofs. For the false statements provide counter examples.
   (a) An Eulerian simple graph has an even number of edges.
   (b) An Eulerian simple bipartite graph has an even number of edges.
   (c) A simple bipartite graph has an even number of edges.
6. Which of the following is impossible?
   (a) A graph with only odd walks

(b) A graph with only even walks

(c) A graph with both odd and even walks