Assignment-3

4. \textbf{Prove the following statements for a graph:}

(a) A graph with 5 vertices is connected if and only if it has 7 or more edges.

(b) A graph with 6 vertices has an Eulerian path if and only if it has at most 2 vertices with odd degree.

5. Convert the following statements into their negations:

(a) A graph is planar if and only if it has no cycles of length 4 or more.

(b) A graph is bipartite if and only if it has no cycles of length 2 or more.

6. Determine if the given graph is a complete graph or not.

7. Describe the given graph as a tree or not.

Diagram:

[Diagram of a graph with labels and connections]

8. Find the shortest path between two vertices.

Diagram:

[Diagram of a graph with labeled edges and vertices]