# Bridges

- Read 4.1, pages 85-87

  - When is an edge called a **bridge**?
  - Can an edge that reaches a leaf vertex be a bridge?
  - Identify the bridges for:
    * path graphs
    * cycle graphs
    * complete graphs
  - Can a disconnected graph have bridges?
  - Is this a valid restatement of an edge $e$ being a bridge for a graph $G$: "the two vertices incident to the edge are on different components of the graph $G - e$"
  - Prove theorem 4.1: An edge is a bridge if and only if it lies on no cycle of the graph.
  - Practice problems: 4.1, 4.2 (Exercise 2.9 can help here), 4.5a (induction on $n$)
  - True or False: If $H$ is a spanning subgraph of $G$, and $e$ is an edge in $H$ which is a bridge in $G$, then it is also a bridge in $H$. What about the other way around?
  - True or False: A graph cannot have exactly one non-bridge edge.
  - Challenge problems: 4.5b, 4.6