

1. §4.3B: 5, 8.
2. Draw a graph with exactly two components.
3. Which complete bipartite graphs  $K_{n,m}$  have cutpoints or bridges?
4. We now have a collection of families of graphs,  $K_n$ ,  $K_{n,m}$ ,  $C_n$ , and  $P_n$ .
  - (a) The names of the graphs are given according to the number of vertices  $n$  (and  $m$ ). Find formulas for the number of edges of each family in terms of  $n$ :  $|E(K_n)|$ ,  $|E(C_n)|$ , and  $|E(P_n)|$ . For example, you've already done this for  $K_{m,n}$ :  $|E(K_{m,n})| = mn$ .
  - (b) Determine the diameters of each of the graphs above.
  - (c) The diameter of a graph was defined to be the *largest* of all the eccentricities of its vertices. Naturally enough, there is a notion for the *smallest* of the eccentricities as well, and it is called the radius, denoted  $R(G)$ . Find the radius of each graph above.