(1) Give an example of a graph whose set of vertices is \( V = \{1, 2, 3\} \) by specifying its edge set.

\[ E = \{ \} \]

(2) Draw your graph by drawing circles for the vertices and curves or lines for the edges.

(Bonus) Will there be two people in this class whose edge set is exactly the same? Why or why not?
(1) Each vertex may be connected to zero one or both of the others. Thus, the possible edges that may be included in a graph on the vertices \( \{1, 2, 3\} \) are \( \{12, 13, 23\} \). There are eight possible choices of edge set:

(a) \( E = \emptyset \), the graph with no edges.
(b) \( E = \{12\} \)
(c) \( E = \{13\} \)
(d) \( E = \{23\} \)
(e) \( E = \{12, 13, 23\} \), the graph with all possible edges
(f) \( E = \{13, 23\} \)
(g) \( E = \{12, 23\} \)
(h) \( E = \{12, 13\} \).

(2) (Depends on your answer for (a))
(3) Since there are eight choices for the edge set and over 30 people enrolled in the class, the Pigeonhole Principle guarantees that at least two people will choose the same edge set.