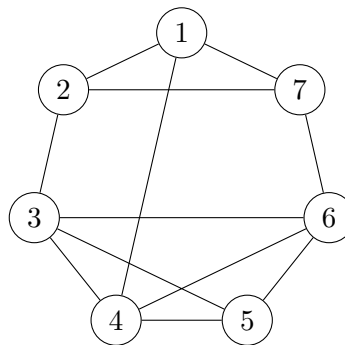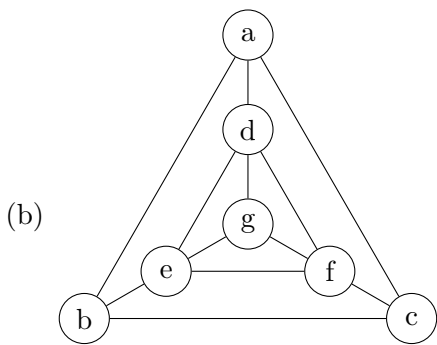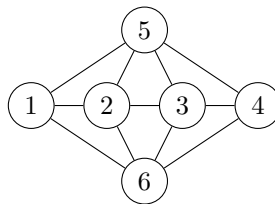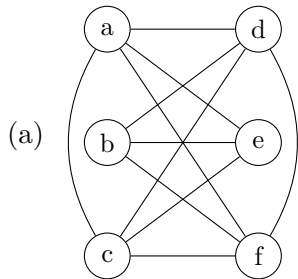Name: _____

**Directions:** Show all work. No credit for answers without work.

1. [**2 parts, 2 points each**] Decide whether the following pairs of graphs are isomorphic. If they are isomorphic, give the function that establishes the isomorphism. If not, explain why.

(a)



(b)

2. [**2 points**] Let $G$ be a planar embedding of a connected graph with 95 vertices and 158 edges. Including the infinite region, how many regions are there?

3. [**2 parts, 2 points each**] A graph $G$ is *self-complementary* if $G$ is isomorphic to its complement $\overline{G}$.

   (a) How many edges are there in an $n$-vertex self-complementary graph?

   (b) Give an example of a 4-vertex self-complementary graph.