

Name: \_\_\_\_\_

**Directions:** Show all work.

1. **[3 parts, 2 points each]** Let  $G$  be the graph whose vertices are the 2-element subsets of  $\{1, \dots, 10\}$  such that  $u$  and  $v$  are adjacent if and only if  $|u \cap v| = 1$ .

(a) How many vertices does  $G$  have? Give a simplified numerical answer.

(b) How many edges does  $G$  have? Give a simplified numerical answer.

(c) Is  $G$  bipartite? Explain why or why not.

2. **[4 points]** Are the following graphs isomorphic? If so, then give an isomorphism. If not, then give a property that distinguishes the graphs.

