# CS 173: Discrete Structures, Spring 2009
## Quiz 3 (Wednesday 2 December)

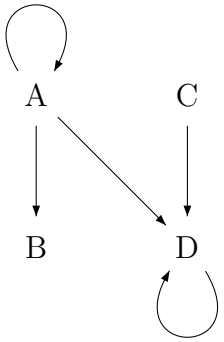
**NAME:**

**NETID:**

**DISCUSSION DAY/TIME:**

This quiz has 2 pages containing 6 questions, totalling 20 points. You have 20 minutes to finish. Showing your work may increase partial credit in case of mistakes.

1. (5 points) Check all boxes which correctly characterize this relation, leaving the other boxes blank. (If you change your answer, make it very clear when you've meant to uncheck a box.)




**Reflexive**: ☐ **Irreflexive**: ☐

**Symmetric**: ☐ **Antisymmetric**: ☐

**Transitive**: ☐

2. (2 points) Which of the following sets have the same cardinality: the integers, the rationals, the reals?

3. (3 points) Draw a picture of the graph $K_{2,3}$.

4. (3 points) Suppose that $R$ is a relation on a set $A$. Define what it means for $R$ to be antisymmetric.

5. (3 points) Ali is buying 15 cans of soda for the computer graphics lunch. The nearby corner shop has four kinds of soda in stock: orange, sprite, coke, and Irn-bru. He needs to decide how many sodas of each kind to get (including possibly not getting any of certain kinds). How many different choices does he have?

6. (4 points) Ellen's parents have a complex social life, so if she tries to call them on Saturday, there's only a 0.4 probability that they will answer the phone. If she tries to call on five Saturdays, what is the probability that they will answer on at least three of these days? (A formula is ok. You don't need to try to reduce it to a single number.)