Quiz 5

1. (5 points) A game begins by distributing five different cards to each of the three players. How many ways are there for the game to begin if each player must receive at least one card?

2. (2 points) Come up with a relation which is transitive and symmetric but not reflexive.

3. (3 points) Let $A = \{1, 2, 3, 4\}$ and let $R = \{(1, 2), (2, 3), (3, 4), (4, 1)\}$. (a) Draw a directed graph representing R. (b) Draw a directed graph representing the transitive closure for R.

(For fun #1) For a relation $R \subseteq A \times B$, show that $R^{-1} \circ R$ is an equivalence relation on A.

(For fun #2) Draw a picture of a relation that is important to you.