Your Name:

Duration of the Quiz is 25 minutes. There are four problems, worth 20 points. Show all your work for full credit. Books, notes etc. are prohibited.

1. Define
$$A = \{x : 0 \le x \le 1\}, \quad B = \{x : 0 \le x \le 3\}, \text{ and } C = \{x : -1 \le x \le 2\}.$$

   Find the following sets:

   (a) $A^c \cap B \cap C$

   (b) $[(A \cup B) \cap C^c]^c$

2. Let A and B be any two events defined on S. Suppose that $P(A) = 0.4$, $P(B) = 0.5$, and $P(A \cap B) = 0.1$. What is the probability that A or B but not both occur?

3. Events A and B are defined on a sample space S such that $P((A \cup B)^c) = 0.5$ and $P(A \cap B) = 0.2$. What is the probability that either A or B but not both will occur?

4. An urn contains twenty-four chips, numbered 1 through 24. One is drawn at random. Let A be the event that the number is divisible by 2 and let B be the event that the number is divisible by 3. Find $P(A \cup B)$.