1. Draw the Venn diagram that corresponds to the equations $i) P(A \cap B) = P(B)$ and $ii) P(A \cup B) = P(B)$.

2. Suppose the events $A_1, A_2, \ldots, A_k$ are intervals of real numbers such that $A_i = \{x : 0 \leq x < 1/i\}$ for $i = 1, 2, \ldots, k$. Describe the sets $\cup_{i=1}^{k} A_i$ and $\cap_{i=1}^{k} A_i$.

3. Let A and B be two events. Suppose $P(A) = 0.4, P(B) = 0.5$, and $P(A \cap B) = 0.1$. Find the probability that at least A or B occurs, but not both.

4. Show that $P(A \cap B) \geq P(A) - P(B')$.

5. Events A_1 and A_2 are such that $A_1 \cup A_2 = S$ and $A_1 \cap A_2 = \emptyset$. Find p_2 if $P(A_1) = p_1$, $P(A_2) = p_2$, and $3p_1 - p_2 = 1/2$.