

Problems from Assignment 1

1. Let A, B , be sets. Consider following version of the distributive law for sets:

$$(A \cup B) \cap C = (A \cap C) \cup (B \cap C).$$

- (a) Use a Venn diagram to visualize the above statement.
 - (b) Prove the above statement.
2. Suppose $E_1 \subseteq E_2$ are events. Let $F = E_2 \setminus E_1$.
- (a) Show E_1 and F are disjoint.
 - (b) Show $E_2 = E_1 \cup F$
 - (c) Show $P(F) = P(E_2) - P(E_1)$