

AI1110 - Probability and Random Variables

Assignment 5

Aakash Kamuju (ai21btech11001)

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Papoulis Pillai Probability Random Variables and Stochastic Processes

Problem 2.2

If $A = \{2 \leq x \leq 5\}$ and $B = \{3 \leq x \leq 6\}$ find $A \cup B, AB, (A \cup B)\overline{AB}$.

Solution

$$A = \{2 \leq x \leq 5\} \quad B = \{3 \leq x \leq 6\}$$

$$A \cup B = A + B$$

$$A + B = \{2 \leq x \leq 6\}$$

$$AB$$

$$AB = \{3 \leq x \leq 5\}$$

Solution Continued

$$A = \{2 \leq x \leq 5\} \quad B = \{3 \leq x \leq 6\}$$

$$A \cup B = A + B$$

$$A + B = \{2 \leq x \leq 6\}$$

$$\overline{AB} = \overline{A} + \overline{B}$$

$$\overline{A} = \{x < 2, x > 5\} \quad \overline{B} = \{x < 3, x > 6\}$$

$$\overline{A} + \overline{B} = \{x < 2, x > 6\}$$

$$(A \cup B)\overline{AB} = \{\phi\}$$