

Assignment 1

AI1110: Probability and Random Variables

INDIAN INSTITUTE OF TECHNOLOGY, HYDERABAD

Dhana Lakshmi
AI22BTECH11012

11.16.3.4: A card is selected from a pack of 52 cards. (a) How many points are there in the sample space? (b) Calculate the probability that the card is an ace of spades. (c) Calculate the probability that the card is (i) an ace and (ii) black card.

Solution: Given a pack of 52 cards,

(a) No. of points in sample space

$$\begin{aligned} \text{Number of points in sample space} &= 52(\text{given}) \\ &\quad (1) \\ &\quad (2) \end{aligned}$$

(b) The probability when the card selected is ace of spades

$$\begin{aligned} \Pr(\text{ace of spades}) &= \frac{1}{52} \quad (3) \\ &\quad (4) \end{aligned}$$

(c) The probability when the card selected is (i) an ace and (ii) black card

$$\Pr(\text{an ace}) = \frac{1}{13} \quad (5)$$

$$\Pr(\text{black card}) = \frac{26}{52} \quad (6)$$

$$(7)$$