Assignment 4

Ayush Kumar Singh - AI20BTECH11028

Download all python codes from

https://github.com/ayush−2321/AI1103/tree/main/assignment%203

and latex-tikz codes from

https://github.com/ayush−2321/AI1103/tree/main/assignment%203

PROBLEM 1.1 (GATE ME 2002)

Two die are thrown. What is the probability that sum of numbers on the two dice is eight

(a) $\frac{5}{36}$

(b) $\frac{5}{18}$

(c) $\frac{1}{4}$

(d) $\frac{1}{3}$

1 SOLUTION

Let X be a discrete random variable which denotes the sum obtained on two dice and $X_1 \in \{1, 6\}$ be a discrete random variable denoting the outcome on a single die.

$$\Pr(X = n) = \begin{cases} 0, & \text{if } n < 1 \\ \frac{n-1}{36}, & \text{if } 1 \le n-1 \le 6 \\ \frac{13-n}{26}, & \text{if } 1 < n-6 \le 6 \\ 0, & \text{if } n > 12 \end{cases} \tag{1.0.1}$$

$$\text{Required probability} = \Pr(X = 8)$$

$$\text{So, from (1.0.1)}, \Pr(X = 8) = \frac{5}{36}$$