AI1103-Assignment 6

Name: Vanga Aravind Shounik, Roll Number: CS20BTECH11055

Download all python codes from

https://github.com/AravindShounik/AI1103/blob/main/Assignment−6/Codes/assignment−6.py

and latex-tikz codes from

https://github.com/AravindShounik/AI1103/blob/main/Assignment−6/assignment−6.tex

Question gate 2014 me-set1, Q.28 (me section)

In the following table, X is a discrete random variable and $p(X = x)$ is the probability density. The standard deviation of X is

X	1	2	3
$p_X(k)$	0.3	0.6	0.1

Solution

The mean of the distribution (μ) is given as

$$\mu = \sum_{k=1}^{3} k p_X(k) \tag{0.0.1}$$

$$= 1.8 \tag{0.0.2}$$

We know that variance(σ^2) is

$$\sigma^2 = E(X^2) - \mu^2 \tag{0.0.3}$$

$$= \sum_{k=1}^{3} k^2 p_X(k) - \mu^2 \tag{0.0.4}$$

$$= 0.36 \tag{0.0.5}$$

We know that standard deviation (σ) is

$$\sigma = \sqrt{\sigma^2} \tag{0.0.6}$$

$$= 0.6 \tag{0.0.7}$$