

AI1103-Assignment 6

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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

TABLE 0: Probability Distribution

SOLUTION

The mean of the distribution (μ) is given as

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

$$= 1.8 \quad (0.0.2)$$

We know that variance(σ^2) is

$$\sigma^2 = E(X^2) - \mu^2 \quad (0.0.3)$$

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

$$= 0.36 \quad (0.0.5)$$

We know that standard deviation (σ) is

$$\sigma = \sqrt{\sigma^2} \quad (0.0.6)$$

$$= 0.6 \quad (0.0.7)$$