AI1103 - Assignment 4

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Download all python codes from

https://github.com/rajasekhar156/assignment−4/blob/main/untitled2.py

and latex-tikz codes from

https://github.com/rajasekhar156/assignment−4/blob/main/main.tex

QUESTION:GATE 2001 (EC), Q. 1.20
The PDF of a Gaussian random variable X is given by $P_X(x) = \frac{1}{3\sqrt{2\pi}} e^{\frac{-(x-4)^2}{18}}$ .The probability of the event X = 4 is

1) $\frac{1}{2}$
2) $\frac{1}{3\sqrt{2\pi}}$
3) 0
4) $\frac{1}{4}$

ANSWER:
Compare the given PDF function with

$$P_X(x) = \frac{1}{\sigma\sqrt{2\pi}} e^{\frac{-(x-\mu)^2}{2\sigma^2}} \tag{0.0.1}$$

$$P_X(x) = \frac{1}{3\sqrt{2\pi}} e^{\frac{-(x-4)^2}{18}} \tag{0.0.2}$$

We get σ and μ as

$$\sigma = 3 \tag{0.0.3}$$

$$\mu = 4 \tag{0.0.4}$$

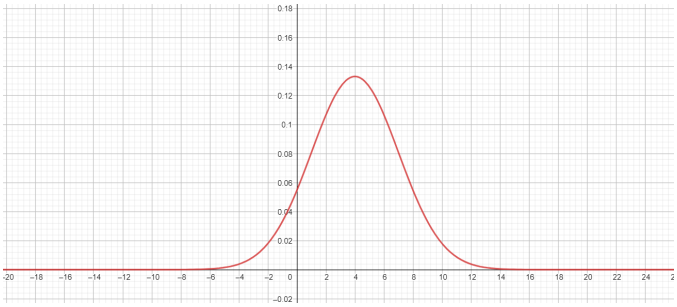
The probability of the event X = 4 is

$$\Pr(X = 4) = \frac{1}{3\sqrt{2\pi}} e^{\frac{-(4-4)^2}{18}} \tag{0.0.5}$$

$$= \frac{1}{3\sqrt{2\pi}} e^{0} \tag{0.0.6}$$

$$= \frac{1}{3\sqrt{2\pi}} \tag{0.0.7}$$

Hence the probability is $\frac{1}{3\sqrt{2\pi}}$.



Graph of PDF function.