Assignment 1(CBSE Class 12)

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Exercise 13.5 Question 14.

In a box containing 100 bulbs.10 are defective. The probability that out of a sample of 5 bulbs ,none are defective is

Solution:

From the given information, the probability of a bulb being defective is

$$p = \frac{10}{100} = \frac{1}{10} \tag{1}$$

$$\tag{2}$$

Defining X as $B\left(5, \frac{1}{10}\right)$ the desired probability is

$$Pr\left(X = 0\right) = {}^{5}C_0 \left(\frac{1}{10}\right)^0 \left(\frac{9}{10}\right)^{5-0} \tag{3}$$
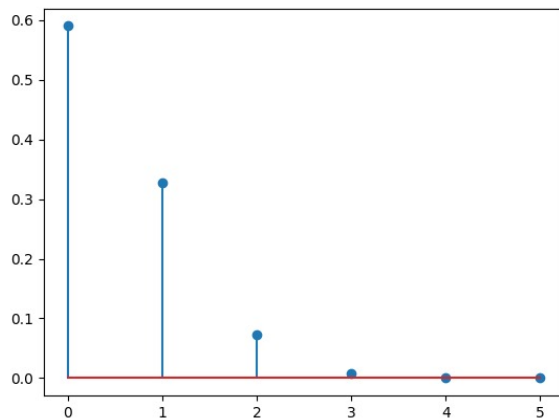
$$= \left(\frac{9}{10}\right)^5 \tag{4}$$

Fig. 1. PMF graph