Math Document Template

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Download all python codes from

svn co https://github.com/SiddharthPh/Summer2020/trunk/geometry/Probstat/codes

1 Probability Exercises

1.1 Exercise 1

1.1.1 Problem: Suppose you drop a die at random on the rectangular region shown in Fig.15.6.What is the probability that it will land inside the circle with diameter 1m?

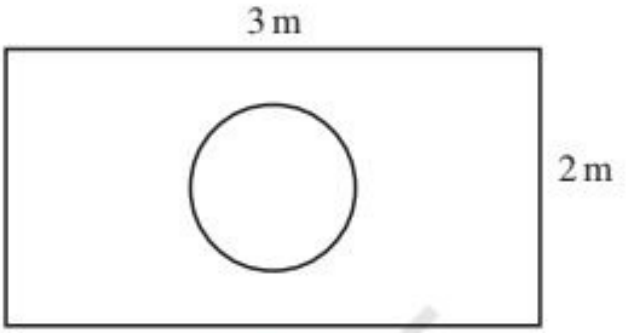

Fig. 15.6

1.1.2 Solution:

1. In the given question,
   The sample size = Total Area of the rectangle=

$$3x2 = 6m^2 \tag{1.1.2.1.1}$$

   Favourable outcome = Area of Circle=

$$\pi\left(\frac{1}{2}\right)^2 = \frac{\pi}{4}m^2 \tag{1.1.2.1.2}$$

   Probabilty(P) of the dice landing in the circle=$\frac{\pi}{24}$
   $\therefore$ P = 0.1308
   The python code for the figure 1.1.2.1

prob/codes/prob1.py

   shows the Bernouli distribution of data.
   The Bernoulli Distribution of data is given

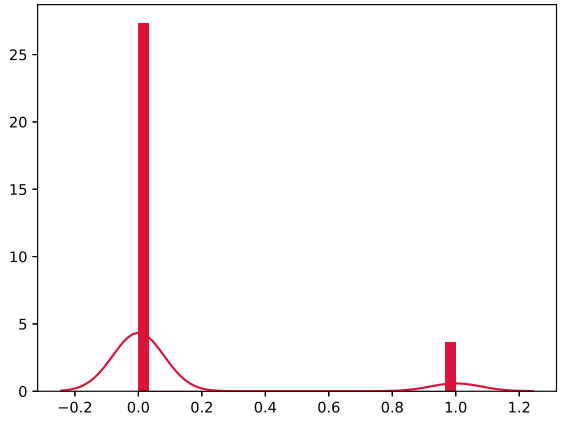

Fig. 1.1.2.1: Bernoulli Distribution.

below
Probability mass function(P(X))=$p^x\,(1-p)^{1-x}$

$$P(X=0) = 1-p \tag{1.1.2.1.3}$$

$$P(X=1) = p \tag{1.1.2.1.4}$$

where p=0.13 given by 1.1.2.1