

11.16.2.2.7

EE24BTECH11058 - P.Shiny Diavajna

Question:

A die is thrown

D: The event that a number less than 4 appears.

E: The event that an even number greater than 4 appears.

Find the probability of the event $D - E$.

Solution:

Probabilities of the given events

$$P(D) = \frac{1}{2} \quad (0.1)$$

$$P(E) = \frac{1}{6} \quad (0.2)$$

$$(0.3)$$

It can be observed that, D and E are disjoint events . Therefore,

$$P(DE) = 0 \quad (0.4)$$

We, know that

$$P(D - E) = P(D) - P(DE) \quad (0.5)$$

$$P(D - E) = \frac{1}{2} - 0 \quad (0.6)$$

$$P(D - E) = \frac{1}{2} \quad (0.7)$$

The code simulates rolling a fair six-sided die 10^5 times and calculates the probabilities of three events:

- D(rolling a number less than 4)
- E(rolling an even number greater than 4)
- D-E(numbers in D but not in E)

It then visualizes these probabilities in the below plot.

Plot:

