Assignment 1

AI1110: Probability and Random Variables
Indian Institute of Techonology Hyderabad

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10.15.1.12 A game of chance consists of spinning an arrow which comes to rest pointing at one of the numbers 1, 2, 3, 4, 5, 6, 7, 8 (see Fig. 15.5), and these are equally likely outcomes. What is the probability that it will point at:

(i) 8?
(ii) an odd number?
(iii) a number greater than 2?
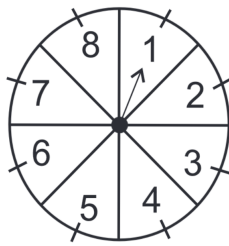(iv) a number less than 9?

Fig. 15.5

Solution: Let X be a random variable defined as the value given by the pointer. Probability of the pointer pointing a number is;

$$p = \frac{1}{8} \tag{1}$$

$$n = 8 \tag{2}$$

(i) For i = 8,

$$\Pr(X = 8) = \frac{1}{8} \tag{3}$$

$$= 0.125 \tag{4}$$

(ii) For i = $\{1, 3, 5, 7\}$

$$\Pr(X) = \frac{4}{8} \tag{5}$$

$$= 0.5 \tag{6}$$

(iii) For i = $\{3, 4, 5, 6, 7, 8\}$

$$\Pr(X) = \frac{6}{8} \tag{7}$$

$$= 0.75 \tag{8}$$

(iv) For i = $\{1, 2, 3, 4, 5, 6, 7, 8\}$

$$\Pr(X) = \frac{8}{8} \tag{9}$$

$$= 1 \tag{10}$$

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