AI1103 - Assignment 1

Monika Kharadi - CS20BTECH11026

PROBLEM

2.12. In a school, there are 1000 students, out of which 430 are girls. It is known that out of 430, 10 percent of girls study in class XII. What is the probability that a student chosen randomly studies in Class XII given that the chosen student is a girl ?

SOLUTION

Total number of girls are 430 out of 1000 students
Total number of girls in Class XII : 10 % of total girls

$\Rightarrow \frac{10*430}{100}$

$\Rightarrow 43$

Let $X \in \{0, 1\}$ be the random variable such that 1 represents girl.

P(X=1)= $\frac{430}{1000}$

Let Y be event that chosen student is in Class XII. Hence, we are asked to find P(Y/X) i.e a student chosen randomly studies in Class XII given that the chosen student is a girl,

By definition, P(Y/X)=$\frac{P(X \cap Y)}{P(X=1)}$

P(Y/X)=$\frac{P(Y) \cap P(X=1)}{P(X=1)}$

P(Y/X)=$\frac{(\frac{43}{1000})}{(\frac{430}{1000})}$

P(Y/X)=0.1