VIDYA BHAWAN, BALIKA VIDYAPITH

Shakti Utthan Ashram, Lakhisarai-811311(Bihar)

(Affiliated to CBSE up to +2 Level)

CLASS : X SUBJECT : MATHEMATICS DATE: 24 .04.2021

Basic Concepts

- Zeroes of a polynomial. k is said to be zero of a polynomial p(x) if p(k) = 0

Q. Find the zeroes of $p(x) = x^2 + 7x + 12$

Sol. $p(x) = x^2 + 7x + 12$

$\Rightarrow p(x) = (x + 3)(x + 4)$

$\therefore p(x) = 0$ if $x + 3 = 0$ or $x + 4 = 0$

$\Rightarrow x = -3$ or $x = -4$

$\therefore -3$ and -4 are zeros of the p(x).

(i) If α, β are zeroes of $p(x) = ax^2 + bx + c$, then Relationship between the zeroes and the coefficients of the Polynomial

$\alpha + \beta$ (sum of zeroes) $= \frac{-b}{a} = \frac{-coefficient\ \ of\ x}{coefficient\ \ of\ squre\ \ of\ x}$

$\alpha \times \beta$ (product of zeroes) $= \frac{c}{a} = \frac{constant}{coefficient\ \ of\ squre\ \ of\ x}$

1. Find the zeroes of the quadratic polynomial and verify the relationship between the zeroes and coefficient of polynomial $p(x) = x^2 + 7x + 12$.

Sol. $p(x) = x^2 + 7x + 12$

$\Rightarrow p(x) = (x + 3)(x + 4)$

$\therefore p(x) = 0$ if $x + 3 = 0$ or $x + 4 = 0$

$\Rightarrow x = -3$ or $x = -4$

$\therefore -3$ and -4 are zeros of the p(x).

Relationship between the zeroes and the coefficients.

$\alpha = -3$, $\beta = -4$, $a = 1$, $b = 7$ and $c = 12$

$\alpha + \beta$ (sum of zeroes) $= \frac{-b}{a}$

$-3 + (-4) = \frac{-7}{1}$

$-7 = -7$

$\alpha \times \beta$ (product of zeroes) $= \frac{c}{a}$

$-3 \times -4 = 12/1$

$12 = 12$ verified

Solve Ex. 2.2