Lecture 3

Module 08

Q. Find the zeroes of the following quadratics Polynomials.

(1) $x^2 - 5x + 6$

Sol.

$x^2 - 5x + 6$

$= 1x^2 - (3x + 2x) + 6$

$= x^2 - 3x - 2x + 6$

$= x(x - 3) - 2(x - 3)$

$= (x - 3)(x - 2)$

$\therefore$ $(x - 3)$ and $(x - 2)$ are the factors of $x^2 - 5x + 6$

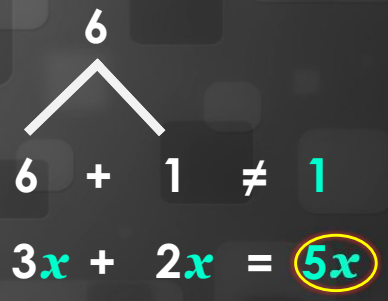
So, the value of $x^2 - 5x + 6$ is zero

When $(x - 3) = 0$ or $(x - 2) = 0$

$\therefore$ $x - 3 = 0$ or $x - 2 = 0$

$\therefore$ $x = 3$ or $x = 2$

$\therefore$ The zeroes of $x^2 - 5x + 6$ are 3 and 2.



Q. Find the zeroes of the following quadratics Polynomials.

(2) $x^2 - 13x - 30$

Sol.

$x^2 - 13x - 30$

$= 1x^2 - (15x - 2x) - 30$

$= x^2 - 15x + 2x - 30$

$= x(x - 15) + 2(x - 15)$

$= (x - 15)(x + 2)$

$\therefore$ $(x - 15)$ and $(x + 2)$ are the factors of $x^2 - 13x - 30$

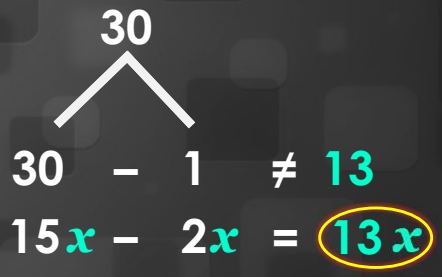
So, the value of $x^2 - 13x - 30$ is zero

When $(x - 15) = 0$ or $(x + 2) = 0$

$\therefore$ $x - 15 = 0$ or $x + 2 = 0$

$\therefore$ $x = 15$ or $x = -2$

$\therefore$ The zeroes of $x^2 + x - 20$ are 15 and -2.



Module 09

Q. Find the zeroes of the following quadratics Polynomials.

(1) $x^2 - 17x + 60$

Sol.

$x^2 - 17x + 60$

$= x^2 - (12x + 5x) + 60$

$= x^2 - 12x - 5x + 60$

$= x(x - 12) - 5(x - 12)$

$= (x - 12)(x - 5)$

$\therefore$ $(x - 12)$ and $(x - 5)$ are the factors of $x^2 - 17x + 60$

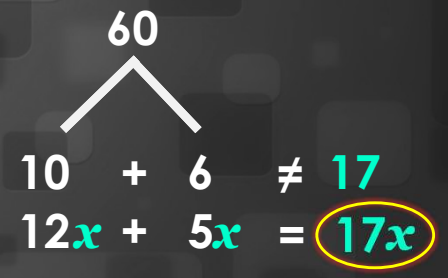
So, the value of $x^2 - 17x + 60$ is zero

When $(x - 12) = 0$ or $(x - 5) = 0$

$\therefore$ $x - 12 = 0$ or $x - 5 = 0$

$\therefore$ $x = 12$ or $x = 5$

$\therefore$ The zeroes of $x^2 - 17x + 60$ are 12 & 5



Q. Find the zeroes of the following quadratics Polynomials.

(2) $2x^2 - 5x - 3$

Sol.

$2x^2 - 5x - 3$

$= 2x^2 - (6x - x) - 3$

$= 2x^2 - 6x + x - 3$

$= 2x(x - 3) + 1(x - 3)$

$= (x - 3)(2x + 1)$

$\therefore$ $(x - 3)$ and $(x + 1)$ are the factors of $2x^2 - 5x - 3$

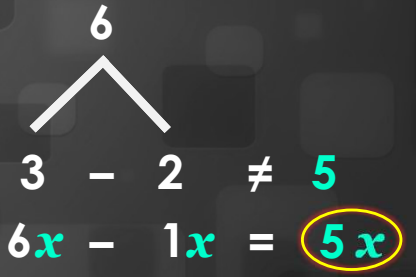
So, the value of $2x^2 - 5x - 3$ is zero

When $(x - 3) = 0$ or $(x + 1) = 0$

$\therefore$ $x - 3 = 0$ or $x + 1 = 0$

$\therefore$ $x = 3$ or $x = -1$

$\therefore$ The zeroes of $2x^2 - 5x - 3$ are 3 and -1.



Module 10

Q. Find the zeroes of the following quadratics Polynomials.

(1) $3x^2 - 10x + 8$

Sol.

$3x^2 - 10x + 8$

$= 3x^2 - (6x + 4x) + 8$

$= 3x^2 - 6x - 4x + 8$

$= 3x(x - 2) - 4(x - 2)$

$= (x - 2)(3x - 4)$

$\therefore$ $(x - 2)$ and $(3x - 4)$ are the factors of $3x^2 - 10x + 8$

So, the value of $3x^2 - 10x + 8$ is zero

When $(x - 2) = 0$ or $(3x - 4) = 0$

$\therefore$ $x - 2 = 0$ or $3x - 4 = 0$

$\therefore$ $x = 2$ or $3x = 4$

$\therefore$ $x = 2$ or $3x = \frac{4}{3}$ $\therefore$ The zeroes of $3x^2 - 10x + 8$ are 2 and $\frac{4}{3}$

24

$8 + 3 \neq 10$

$6x + 4x = 10x$

Q. Find the zeroes of the following quadratics Polynomials.

(2) $6x^2 - 7x - 13$

Sol. $6x^2 - 7x - 13$

$= 6x^2 - (13x - 6x) - 13$

$= 6x^2 - 13x + 6x - 13$

$= x(6x - 13) + 1(6x - 13)$

$= (6x - 13)(x + 1)$

$\therefore$ $(6x - 13)$ and $(x + 1)$ are the factors of $6x^2 - 7x - 13$

So, the value of $6x^2 - 7x - 13$ is zero

When $(6x - 13) = 0$ or $(x + 1) = 0$

$\therefore$ $6x - 13 = 0$ or $x + 1 = 0$

$\therefore$ $6x = 13$ or $x = -1$

$\therefore$ $6x = \frac{13}{6}$ or $x = -1$ $\therefore$ The zeroes of $6x^2 - 7x - 13$ are $\frac{13}{6}$ and -1

78

$13x - 6x = 7x$

Module 11

Q. Find the zeroes of the following quadratics Polynomials.

(1) $3x^2 - 11x + 6$

Sol.

$3x^2 - 11x + 6$

$= 3x^2 - (9x + 2x) + 6$

$= 3x^2 - 9x - 2x + 6$

$= 3x(x - 3) - 2(x - 3)$

$= (x - 3)(3x - 2)$

$\therefore$ $(x - 3)$ and $(3x - 2)$ are the factors of $3x^2 - 11x + 6$

So, the value of $3x^2 - 11x + 6$ is zero

When $(x - 3) = 0$ or $(3x - 2) = 0$

$\therefore \quad x - 3 = 0$ or $3x - 2 = 0$

$\therefore \quad x = 3$ or $3x = 2$

$\therefore \quad x = 3$ or $3x = \frac{2}{3}$

$\therefore$ The zeroes of $3x^2 - 11x + 6$ are 3 and $\frac{2}{3}$

18

$6 + 3 \neq 11$

$9x + 2x = 11x$

Q. Find the zeroes of the following quadratics Polynomials.

(2) $10x^2 + 3x - 4$

Sol. $10x^2 + 3x - 4$

$= 10x^2 + (8x - 5x) - 4$

$= 10x^2 + 8x - 5x - 4$

$= 2x(5x + 4) - 1(5x - 4)$

$= (5x + 4)(2x - 1)$

$\therefore$ $(5x + 4)$ and $(2x - 1)$ are the factors of $10x^2 + 3x - 4$

So, the value of $10x^2 + 3x - 4$ is zero

When $(5x + 4) = 0$ or $(2x - 1) = 0$

$\therefore$ $5x + 4 = 0$ or $2x - 1 = 0$

$\therefore$ $5x = -4$ or $2x = -1$

$\therefore$ $x = \frac{-4}{5}$ or $2x = -1$ $\therefore$ The zeroes of $10x^2 + 3x - 4$ are $\frac{-4}{5}$ and -1.

40

$10 - 4 \neq 3$

$8x - 5x = 3x$

Module 12

Q. Find the zeroes of the following quadratics Polynomials.

(1) $x^2 - x - 132$

Sol.

$x^2 - x - 132$

$= 1x^2 - (12x - 11x) - 132$

$= x^2 - 12x + 11x - 132$

$= x(x - 12) + 11(x - 12)$

$= (x - 12)(x + 11)$

$\therefore$ $(x - 12)$ and $(x + 11)$ are the factors of $x^2 - x - 132$

So, the value of $x^2 - x - 132$ is zero

When $(x - 12) = 0$ or $(x + 11) = 0$

$\therefore$ $x - 12 = 0$ or $x + 11 = 0$

$\therefore$ $x = 12$ or $x = -11$

$\therefore$ The zeroes of $x^2 - x - 132$ are 12 and -11.

132

$132 - 1 \neq 1$

$12x - 11x = 1x$

Q. Find the zeroes of the following quadratics Polynomials.

(2) $x^2 - 3\sqrt{3}x + 6$

Sol.

$x^2 - 3\sqrt{3}x + 6$

$= x^2 - (2\sqrt{3}x + \sqrt{3}x) + 6$

$= x^2 - 2\sqrt{3}x - \sqrt{3}x + 6$

$= x(x - 2\sqrt{3}) - \sqrt{3}(x - 2\sqrt{3})$

$= (x - 2\sqrt{3})(x - \sqrt{3})$

$\therefore$ $(x - 2\sqrt{3})$ and $(x - \sqrt{3})$ are the factors of $x^2 - 3\sqrt{3}x + 6$

So, the value of $x^2 - 3\sqrt{3}x + 6$ is zero

$= (x - 2\sqrt{3}) = 0$ or $(x - \sqrt{3}) = 0$

$= x = 2\sqrt{3}$ or $x = \sqrt{3}$

$\therefore$ The zeroes of are $x^2 - 3\sqrt{3}x + 6$ and $\sqrt{3}$.

6

$2\sqrt{3}x + \sqrt{3}x = 3\sqrt{3}x$

$6 = 2 \times 3$

$= 2 \times \sqrt{3} \times \sqrt{3}$

Thank You