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Under CSR Support by ipca | Foundation

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ARJUN BATCH

CLASS 10th | MATHS

POLYNOMIALS

बहुपद

अध्याय-2 भाग-3

एकदम BASIC से!



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आज क्या पढेंगे ?



1. द्विघात बहुपद के शुन्यक ज्ञात करना
2. शून्यकों तथा गुणांकों में सम्बन्ध


mg

$p(x) = ax + b$

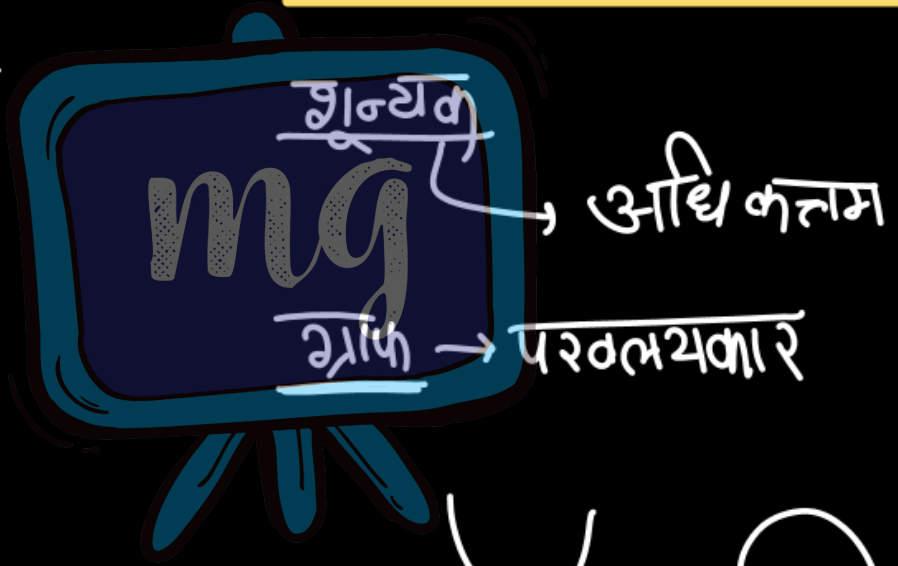
ग्राफ - रेखिक

शून्यक - 1

$p(x) = ax^2 + bx + c$

शून्यक → अधिकतम 2 शून्यक

ग्राफ → परवलयकार





$a > 0$



$a < 0$

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गुणा

$1 \times 10 = 10$

$1 + 10 = 11$

$2 + 5 = 7$ जोड़ने

$7x = 2x + 5x$

$x + 2 = 0, \quad x + 5 = 0$

$x = -2, \quad x = -5$

Q. $P(x) = x^2 + 7x + 10$

शून्यक के लिए

$P(x) = 0$

$x^2 + 7x + 10 = 0$ → 5×2

$x^2 + 2x + 5x + 10 = 0$

$x(x+2) + 5(x+2) = 0$

$(x+2)(x+5) = 0$

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$|x-21| = -21$

x: $1 + (-21) = -20$

y: $3 + (-7) = -4$

$-3 + 7 = 4$

$-4x = 3x - 7x$

Q. $g(x) = x^2 - 4x - 21$

हल:- शून्यक के लिए

$g(x) = 0$

$x^2 - 4x - 21 = 0$

$x^2 + 3x - 7x - 21 = 0$

$x(x+3) - 7(x+3) = 0$

$(x+3)(x-7) = 0$

$x + 3 = 0$ | $x - 7 = 0$

$x = -3$ | $x = 7$

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Q. $h(x) = x^2 - 16x + 63$

हल :-

$h(x) = 0$

$1 \cdot x^2 - 16x + 63 = 0$

$1 \times 63 = 63$

$-7 + (-9) = -16$

$x^2 - 7x - 9x + 63 = 0$

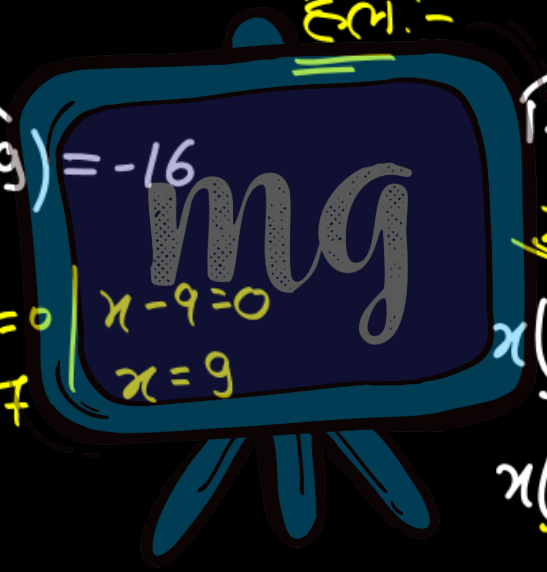
$x(x-7) + 9(-x+7) = 0$

$x(x-7) - 9(x-7) = 0$

$(x-7)(x-9) = 0$

$x - 7 = 0$ | $x - 9 = 0$

$x = 7$ | $x = 9$



H.W.

Q $q(x) = x^2 + 8x - 33$



Home कार्य

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

x^2 के गुणांक को हमेशा अचर पद से गुणा करना है।

Q. $r(n) = 4x^2 - 4x - 3$

हल:-

$r(x) = 0$

$4x^2 - 4x - 3 = 0$

$4x^2 + 2x - 6x - 3 = 0$

$4x - 3 = -12$

$-4 + 3 = -1$ ✗

$2 + (-6) = -4$

$2x(2x+1) - 3(2x+1) = 0$

$(2x+1)(2x-3) = 0$

$2x+1 = 0$ | $2x-3 = 0$

$x = -1/2$ | $x = 3/2$

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11.10

Q. $S(x) = 9x^2 - 1$



H.W.

Q. $t(y) = x^2 + 20x + 96$



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शून्यक

$p(x) = ax^2 + bx + c$



$a, b, \ldots$ → गुणांक

c → अचर पद

$$p(\alpha) = a(\alpha)^2 + b(\alpha) + c = 0$$

$$p(\beta) = a(\beta)^2 + b(\beta) + c = 0$$

द्विघात बहुपदों में शून्यकों एवं गुणांकों में संबंध

माना $p(x) = ax^2+bx+c$; $a \neq 0$

$a, b, c \in \mathbb{R}$

$\alpha, \beta \rightarrow$ शून्यक हैं।

$$\alpha+\beta = \frac{-b}{a} \quad \Big| \quad \alpha\beta = \frac{c}{a}$$

(अनुच्छेद 3) शून्यकों का योग $= -\frac{b}{a} = \frac{-\text{x का गुणांक}}{x^2 \text{ का गुणांक}}$

(अनुच्छेद 4) शून्यकों का गुणनफल $= \frac{c}{a} = \frac{\text{अचर पद}}{x^2 \text{ का गुणांक}}$

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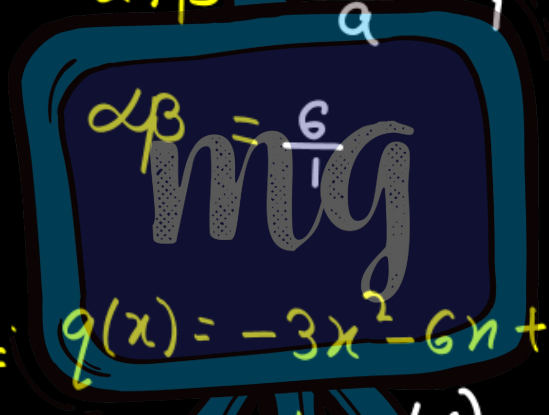
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Q. $p(x) = x^2 + 5x + 6$ के लिए

$a = 1, b = 5, c = 6$

$\alpha + \beta = \frac{-b}{a} = \frac{-5}{1}$

$\alpha\beta = \frac{6}{1}$



Q. $q(x) = -3x^2 - 6x + 11$ के लिए $a = -3, b = -6, c = 11$

$\alpha + \beta = \frac{-b}{a} = \frac{-(-6)}{-3} = \frac{6}{-3} = -2$

$\alpha\beta = \frac{c}{a} = \frac{11}{-3} = -\frac{11}{3}$

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Q. $g(x) = -5x^2 - 11$ $\quad a = -5$, $b = 0$, $c = -11$

$\alpha + \beta = \frac{-b}{a} = \frac{0}{-5} = 0$

$\alpha\beta = \frac{c}{a} = \frac{+11}{+5} = \frac{11}{5}$

Q. $h(x) = 11x^2 - 13x - 26$ $\quad a = 11$, $b = -13$, $c = -26$

$\alpha + \beta = \frac{-b}{a} = \frac{-(-13)}{11} = \frac{13}{11}$

$\alpha\beta = \frac{c}{a} = \frac{-26}{11}$

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$\alpha+\beta, \alpha\beta$

Q. $p(y) = -3y^2 + 11y - 30$

Q. $p(x) = 13x^2 + 2x$

Q. $g(x) = 5x^2 - \pi x + 15$