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कक्षा-10वीं राजस्थान बोर्ड 2027

ARJUN BATCH

गणित

LIVE TEST

CHAPTER -02 | PART-05

एकदम बेसिक से थ्योरी क्लास!

12 अगस्त 2026 || 05:00 PM



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Q.1 यदि 3, बहुपद $p(x) = 2x^2 + x + k$ एक शून्यक है, तो k का मान है–



अ 21

ब -21

स 15

द -15

$p(x) = 2x^2 + x + k$

$p(3) = 0$

$p(3) = 2(3)^2 + 3 + k$

$0 = 18 + 3 + k$

$0 = 21 + k$

$-21 = k$

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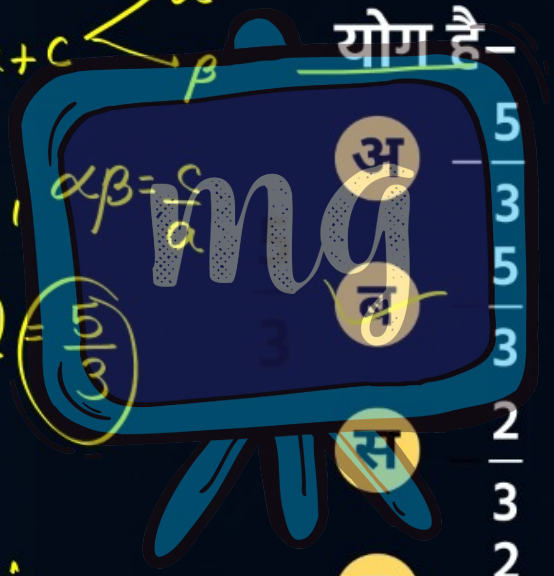
Q.2 बहुपद $3x^2 - 5x + 2$ के शून्यकों का योग है–

$p(x) = ax^2 + bx + c$ < α, β

$a = 3,\ b = -5,\ c = 2$

$\alpha + \beta = \frac{-b}{a}$, $\alpha\beta = \frac{c}{a}$

$\alpha + \beta = \frac{-(-5)}{3} = \frac{5}{3}$



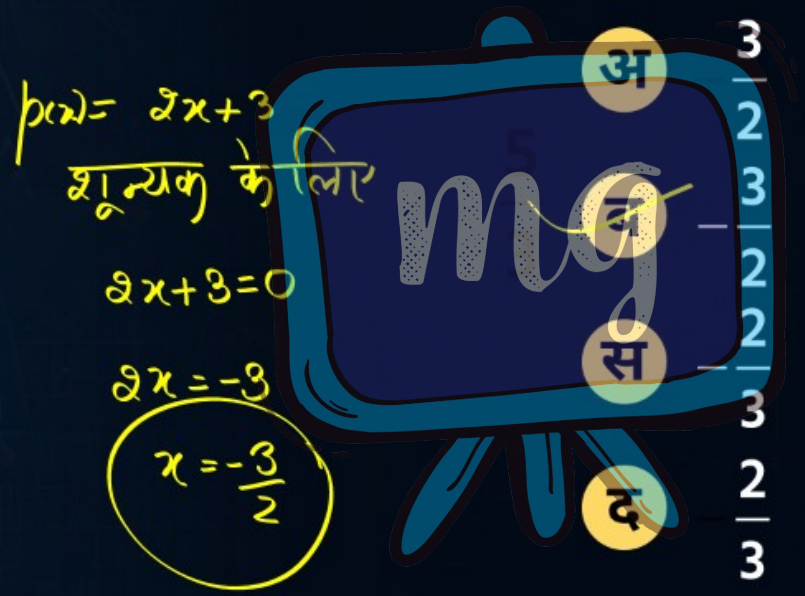
अ $\frac{5}{3}$

ब $\frac{5}{3}$

स $\frac{2}{3}$

द $-\frac{2}{3}$

Q.3 रैखिक बहुपद $2x + 3$ का शून्यक है–



(अ) $\frac{3}{2}$

(ब) $-\frac{3}{2}$

(स) $\frac{2}{3}$

(द) $\frac{2}{3}$

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$1 \times 10 = 10$

$-5 \quad -2$

Q.4 $x^2 - 7x + 10$ के शून्यक है–

(अ) 1, 10

(ब) 2, 5

(स) −2, −5

(द) 3, 4

$p(x) = x^2 - 7x + 10$

$p(x) = x^2 - 5x - 2x + 10$

$= x(x-5) - 2(x-5)$

$= (x-5)(x-2)$

$p(x) = 0$

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

$x - 5 = 0 \quad | \quad x - 2 = 0$

$x = 5 \quad | \quad x = 2$

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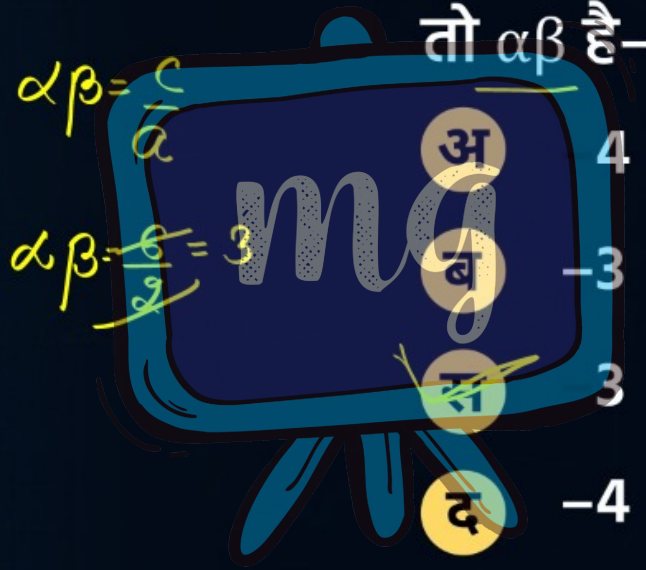
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Q.5 यदि α, β, $2x^2 - 8x + 6$ के शून्यक हैं, तो $\alpha\beta$ है–

$a=2,\ b=-8,\ c=6$

$\alpha\beta = \frac{c}{a}$

$\alpha\beta = \frac{6}{2} = 3$



अ 4

ब −3

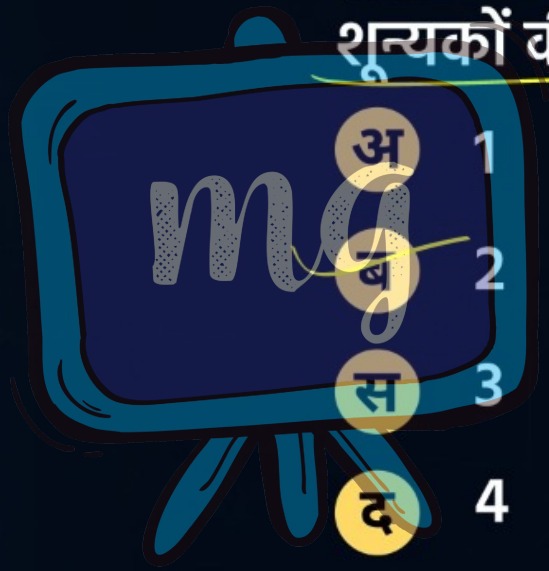
स 3

द −4

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Q.6 एक द्विघात बहुपद के अधिकतम शून्यकों की संख्या हो सकती है–



अ 1

ब 2

स 3

द 4

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$\alpha+\beta=-3$

Q.7 यदि दो शून्यकों का योग –3 और गुणनफल 2 है, तो एक द्विघात बहुपद है–

$\alpha\beta=2$

$p(x)=k[x^2-(\alpha+\beta)x+\alpha\beta]$

$p(x)=k[x^2-(-3)x+2]$

$=k[x^2+3x+2]$

(अ) $x^2 - 3x + 2$

(ब) $x^2 + 3x + 2$

(स) $x^2 - 3x - 2$

(द) $x^2 + 2x + 3$

Q.8 यदि α, β, $2x^2 - 5x + 2$ के शून्यक हैं, तो $\frac{1}{\alpha} + \frac{1}{\beta}$ का मान है–

अ $-\frac{2}{5}$

ब $\frac{5}{2}$

स $-\frac{2}{3}$

द $-\frac{2}{3}$

$\frac{1}{\alpha} + \frac{1}{\beta}$

$\frac{\beta + \alpha}{\alpha\beta}$ ✓

$\frac{5}{2} = \frac{5}{2}$

$p(x) = 2x^2 - 5x + 2$

$a = 2, b = -5, c = 2$

$\alpha + \beta = -\frac{b}{a} = -\frac{(-5)}{2}$

$\alpha + \beta = \frac{5}{2}$

$\alpha\beta = \frac{c}{a} = \frac{2}{2}$

$\alpha\beta = 1$

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11.W.

Q.9 यदि 2, बहुपद $x^2 - 6x + k$ का एक शून्यक है, तो k = ____



अ 6

ब 8

स 10

द 12

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Q.10 यदि $\alpha + \beta = 7$ तथा $\alpha\beta = 10$ तो $\alpha^2\beta + \alpha\beta^2$ का मान है।



अ 17

ब 35

स 70

द 100

$\alpha + \beta = 7$, $\alpha\beta = 10$

$\alpha^2\beta + \alpha\beta^2$

$\alpha\beta(\alpha+\beta)$

$10 \times 7 = 70$

Q.11 जिन शून्यकों का योग 0 और गुणनफल -9 है, उनसे बना बहुपद है-

$\alpha+\beta=0$

$\alpha\beta=-9$

$p(x)=k[x^2-(\alpha+\beta)x+\alpha\beta]$

$=k[x^2-0\cdot x+(-9)]$

$=k[x^2-9]$

अ $x^2 + 9$

ब $x^2 - 9$

स $x^2 - 9x$

द $x^2 + 9x$

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Q.12 $6x^2 - 7x - 3$ के शून्यक ~~के शून्यक~~ ज्ञात करो।



हल :- $p(x) = 6x^2 - 7x - 3$

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

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

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

शून्यक के लिए

$p(x) = 0$

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

$2x-3=0$	$3x+1=0$
$2x=3$	$3x=-1$
$x=\frac{3}{2}$	$x=-\frac{1}{3}$

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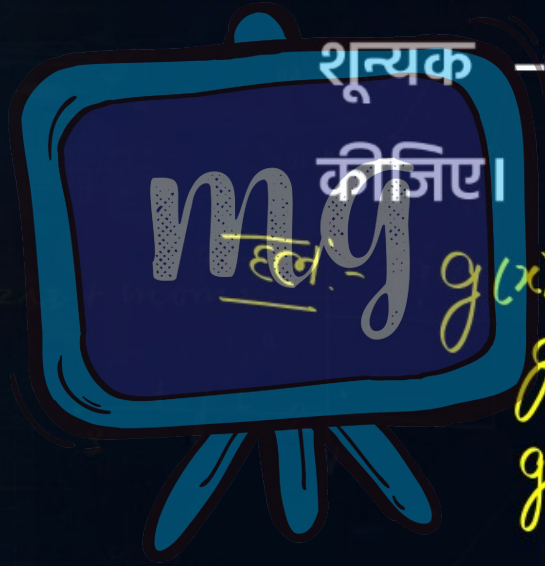


अतः बहुपद $6x^2-7x-3$ के शून्यक $\frac{3}{2}$ और $-\frac{1}{3}$ हैं।

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Q.13 $g(x) = 2x^2 + 15x + k$ का एक शून्यक -7 हो तो k का मान ज्ञात कीजिए।



हल :- $g(x) = 2x^2 + 15x + k$

$g(-7) = 0$

$g(-7) = 2(-7)^2 + 15(-7) + k$

$0 = 2 \times 49 - 105 + k$

$0 = 98 - 105 + k$

$0 = -7 + k$

$\boxed{k = 7}$

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Q.14 $h(x) = x^2 - 3x + 2k$ का एक शून्यक -5 हो तो k का मान ज्ञात कीजिए।

हल :- $h(x) = x^2 - 3x + 2k$

$h(-5) = 0$

$h(-5) = (-5)^2 - 3(-5) + 2k$

$0 = 25 + 15 + 2k$

$0 = 40 + 2k$

$-40 = 2k$

$k = -20$

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$\alpha+\beta = \frac{-b}{a} = \frac{-11}{3}$ $\quad \frac{-4}{3}$

$\frac{1}{\alpha}+\frac{1}{\beta}$

Q.15 यदि बहुपद $3x^2 + 11x - 4$ के शून्यक m और n है, तो $\frac{m}{n} + \frac{n}{m}$ का मान ज्ञात कीजिए।

$\frac{\alpha}{\beta}+\frac{\beta}{\alpha}$

$\frac{\alpha^2+\beta^2}{\alpha\beta} = \frac{(\alpha+\beta)^2-2\alpha\beta}{\alpha\beta}$

$= \frac{\left(\frac{-11}{3}\right)^2 - 2\left(\frac{-4}{3}\right)}{\frac{-4}{3}}$

$= \frac{121}{9} + \frac{8}{3}$

$\frac{-4}{3}$

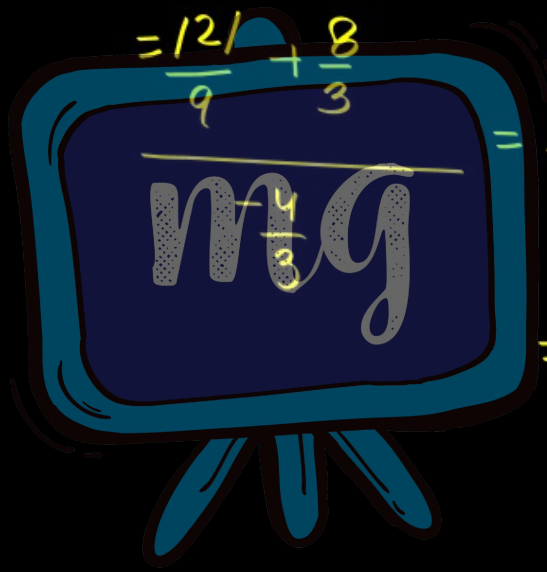
$(a+b)^2 = a^2+b^2+2ab$

$(a+b)^2 - 2ab = a^2+b^2$

$(\alpha+\beta)^2 - 2\alpha\beta = \alpha^2+\beta^2$

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$$= \frac{\frac{121}{9} + \frac{8}{3}}{-\frac{4}{3}} = \frac{\frac{121+24}{3}}{-\frac{4}{3}}$$

$$= \frac{145}{3} \times -4 = -\frac{145}{12}$$

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Q.16 यदि बहुपद $ax^2 - 6x - 6$ के शून्यकों का गुणनफल 4 है, तो a का मान ज्ञात कीजिए।

हल. $p(x) = ax^2 - 6x - 6$

$\alpha\beta = \frac{c}{a}$

$4 = \frac{-6}{a}$

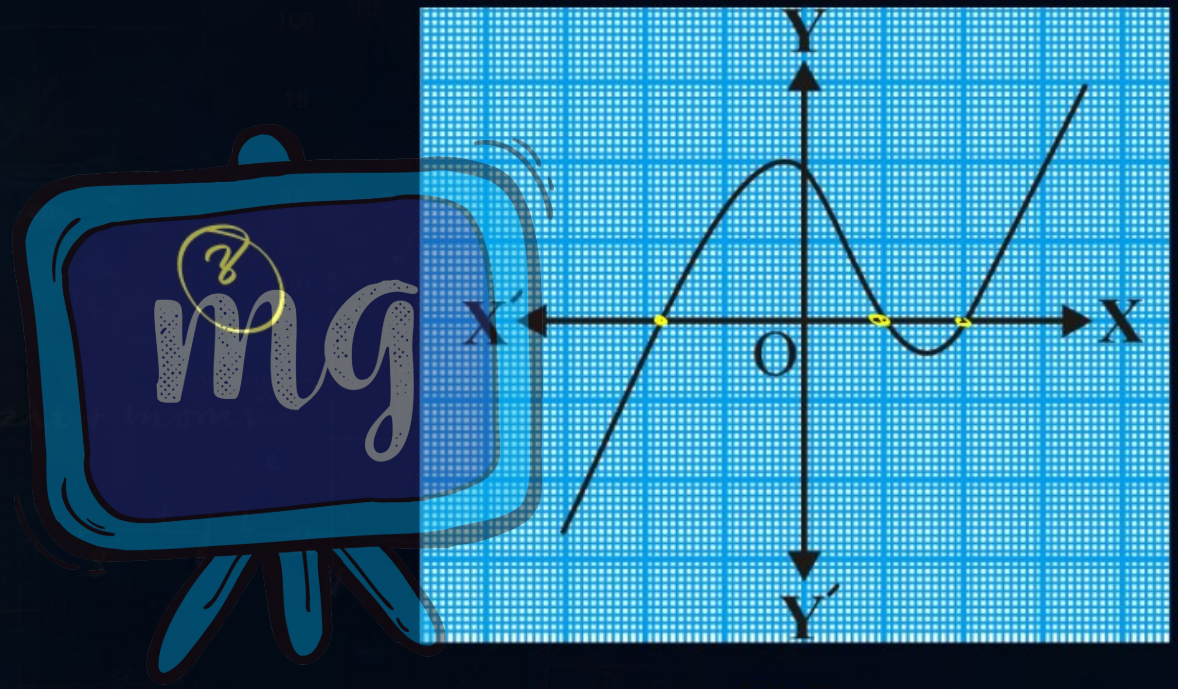
$\alpha\beta = 4$

$a = \frac{-6}{4}^{3}_{2}$

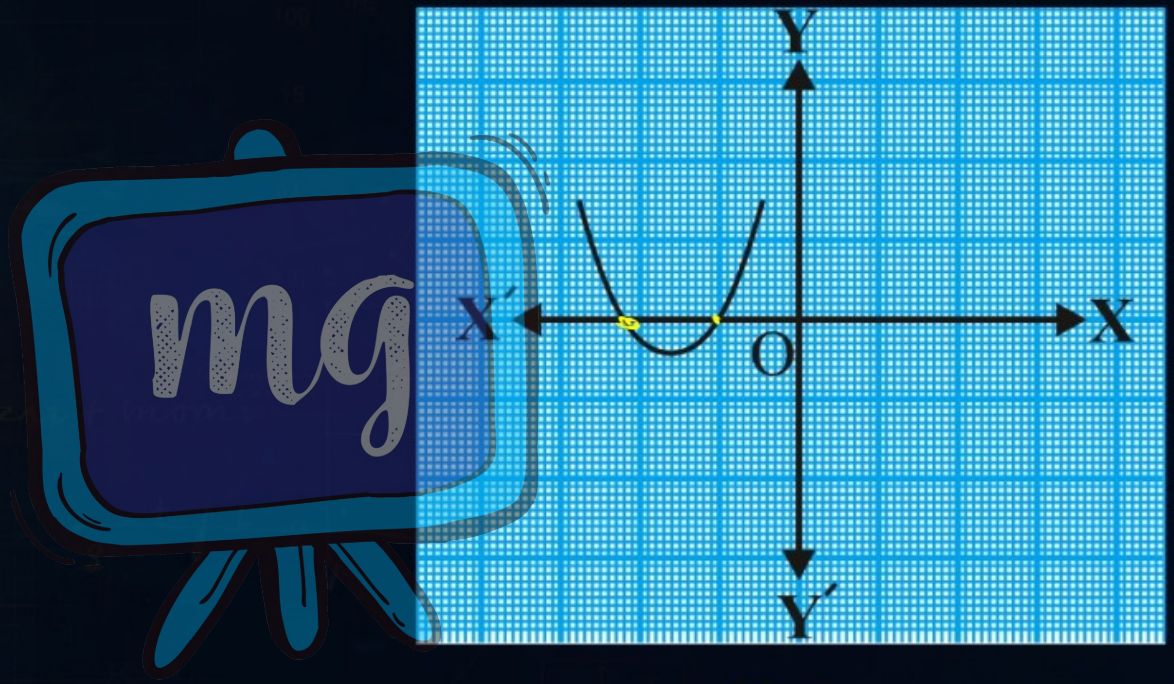
$a = -\frac{3}{2}$

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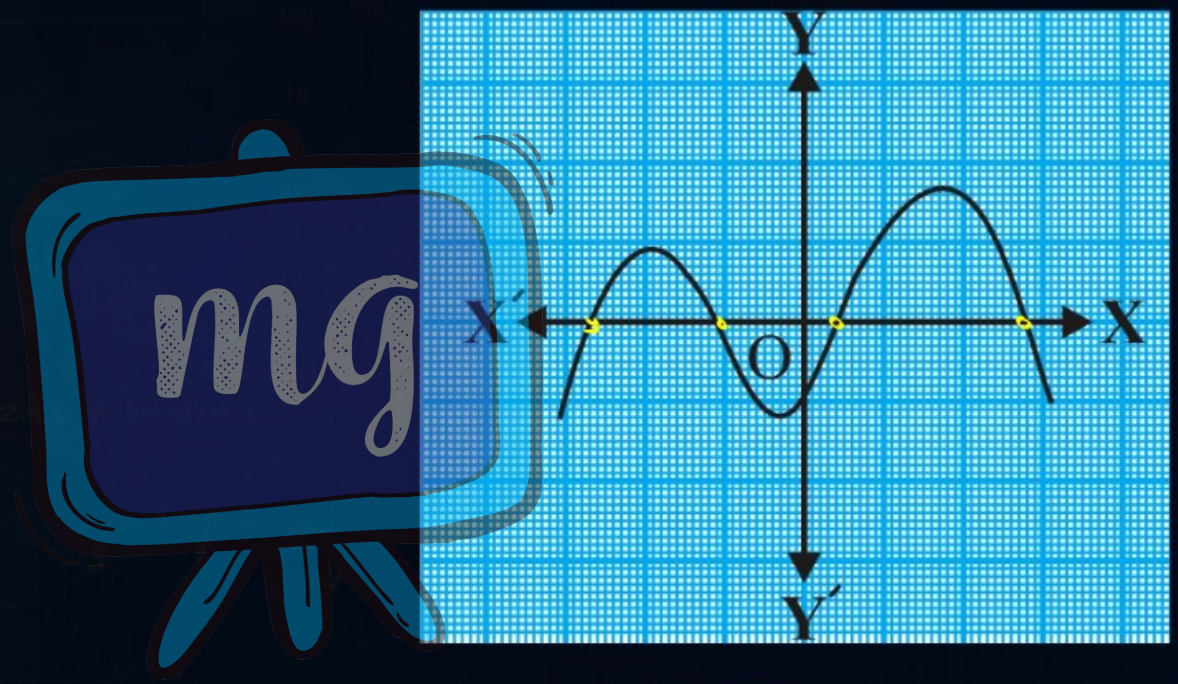
(iii)



(iv)

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(v)

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बहुपद (4)

पर की घात पूर्ण संख्या हो।

बहुपद की घात

पर की अधिकतम घात

(1) रैखिक (2) द्विघात (3) त्रिघात

$p(x) = ax + b$

शून्यक 1

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

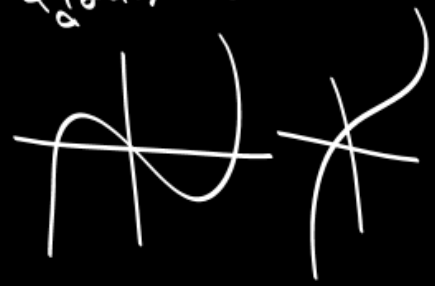
शून्यक 2

परवलयकार

$a > 0$ $a < 0$

$p(x) = ax^3 + bx^2 + cx + d$

शून्यक – 3



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α β

$p(x) = ax^2 + bx + c$, $a \neq 0$

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

$\alpha\beta = \frac{c}{a}$

$p(x) = k[x^2 - (\alpha+\beta)x + \alpha\beta]$

α β γ

$p(x) = ax^3 + bx^2 + cx + d$; $a \neq 0$

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

$\alpha\beta + \beta\gamma + \gamma\alpha = \frac{c}{a}$

$\alpha\beta\gamma = \frac{-d}{a}$

mg