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ARJUN BATCH

CLASS 9th MATHS

बहुपद

Chapter-2 | Part-5



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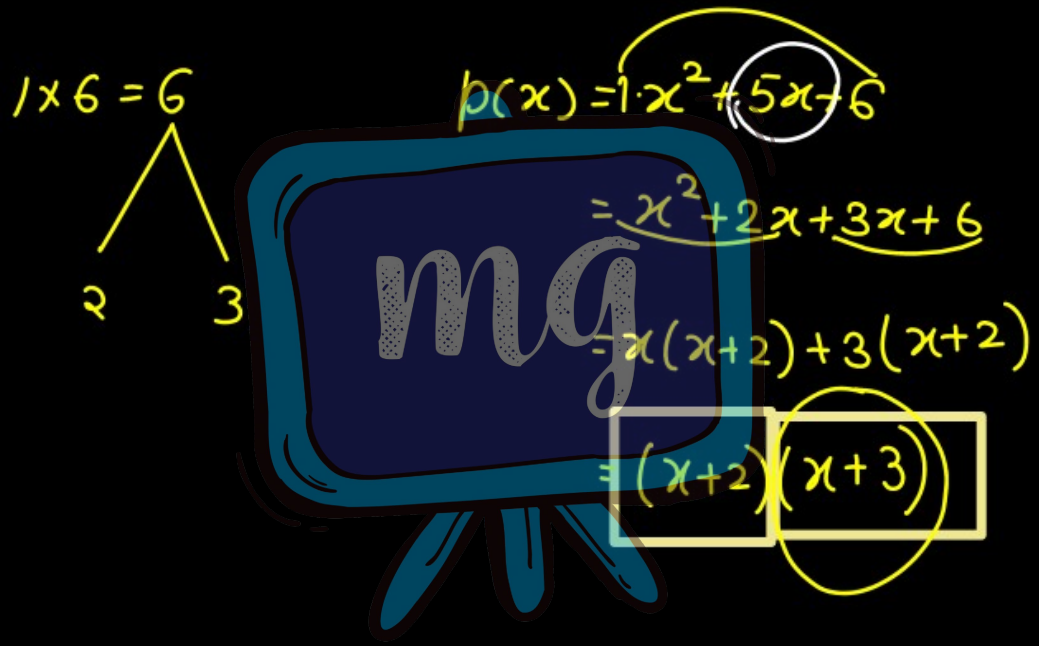
आज क्या पढेंगे ?



1. बहुपद के गुणनखण्ड
2. प्रश्नावली - 2.3

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$1 \times 6 = 6$

$\pm 1, \pm 2, \pm 3, \pm 6$

$p(x) = 1x^2 + 5x + 6$

$x = -3$

$p(-3) = (-3)^2 + 5(-3) + 6$

$= 9 - 15 + 6$

$= 15 - 15$

$p(-3) = 0$

$(x+3)$ ✓

$x = 1$

$p(1) = 1^2 + 5 \times 1 + 6$

$= 1 + 5 + 6$

$p(1) = 12$

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$x \times x = x^2$

$x^2 \times x = x^3$

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

$x^2+1 = \frac{x^3+x}{x}$

$x+2$

$x+3 \;\overline{)\; x^2+5x+6}$

$-(x^2+3x)$

$2x+6$

$-(2x+6)$

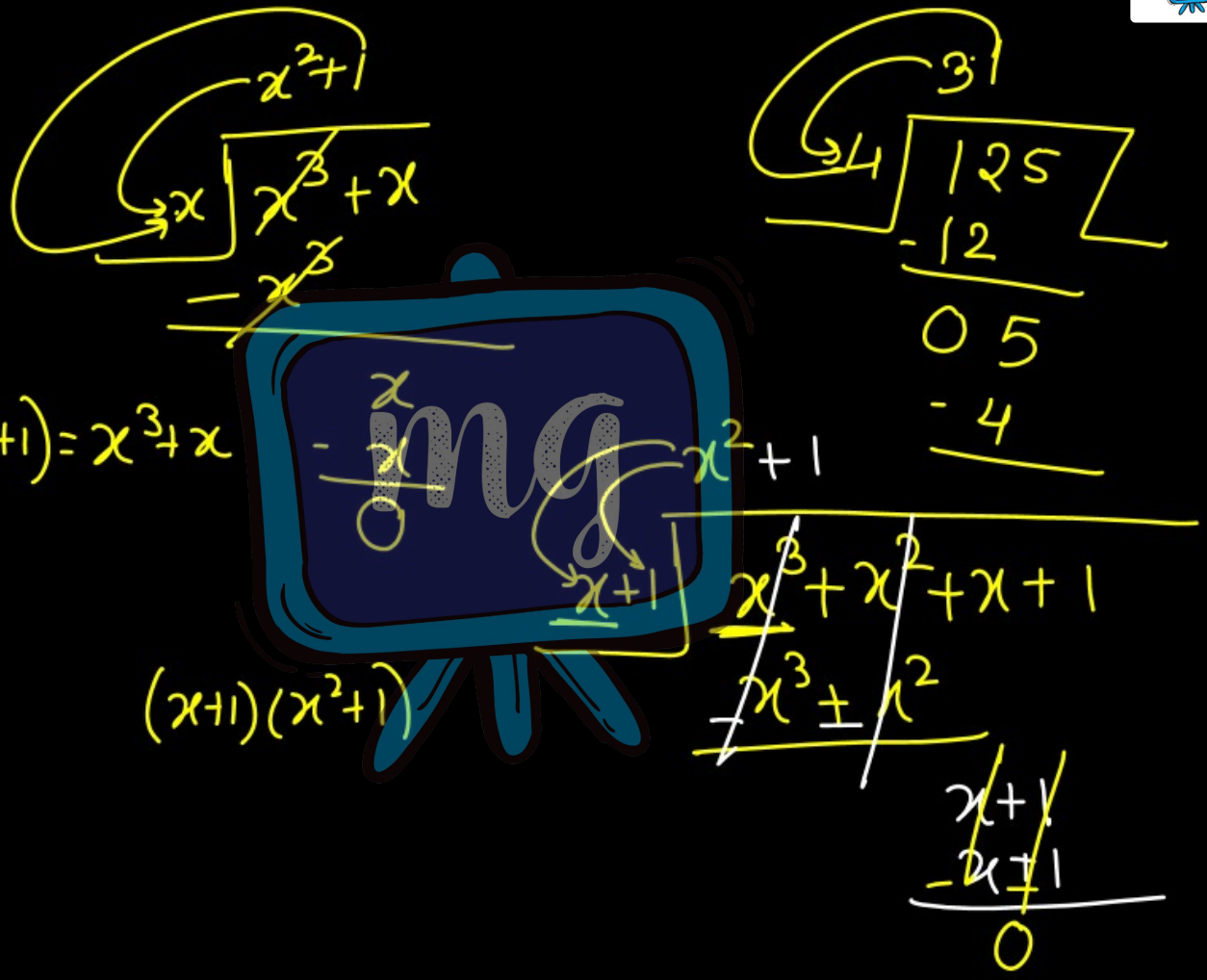
0

$(x+3)(x+2)$

mg

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$x = \pm 1, \pm 2, \pm 3, \pm 4, \ldots$

$x = 1$ पर

$p(1) = (1)^3 - 2(1)^2 - 1 + 2$

$= 1 - 2 - 1 + 2$

$\boxed{p(1) = 0}$

$x - 1 = 0$

प्रश्नावली - 2.3

5. गुणनखंड ज्ञात कीजिए :

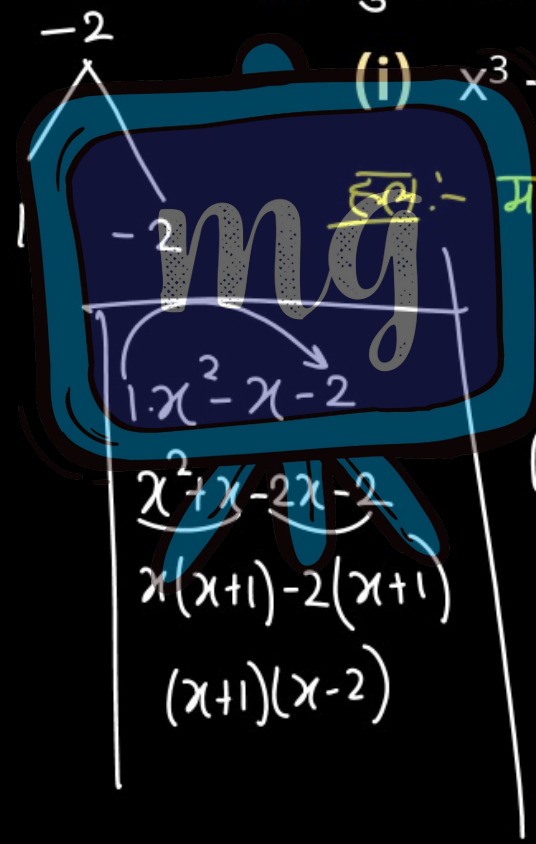
(i) $x^3 - 2x^2 - x + 2$

हल :- माना $p(x) = x^3 - 2x^2 - x + 2$

$x - 1$, $p(x)$ का एक गुणनखंड है।

$p(x) = (x-1)(x^2 - x - 2)$

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



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

x^2-x-2

$x-1 \;\overline{)\; x^3-2x^2-x+2}$

$-x^3 \mp x^2$

$-x^2-x+2$

$-x^2 \pm x$

$-2x+2$

$-2x+2$

0

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(ii) $x^3 - 3x^2 - 9x - 5$

$x - 5 = -5$

$1 \quad -5$

हल :-

माना $p(x) = x^3 - 3x^2 - 9x - 5$

$x+1$, $p(x)$ का एक गुणनखण्ड है।

$x = 1$ लेने पर

$p(1) = (1)^3 - 3(1)^2 - 9(1) - 5$

$= 1 - 3 - 9 - 5$

$= 1 - 17$

$p(1) = -16$

$x + 1 = 0$ $x = -1$ लेने पर

$p(-1) = (-1)^3 - 3(-1)^2 - 9(-1) - 5$

$= -[-3 + 9 - 5]$

$= -9 + 9$

$p(-1) = 0$ ✓

$x^2 - 4x - 5$

$x^2 + x - 5x - 5$

$x(x+1) - 5(x+1)$

$(x+1)(x-5)$

$p(x) = x^3 - 3x^2 - 9x - 5$

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

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

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

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

$$
\begin{array}{r|l}
 & x^2-4x-5 \\
\hline
x+1 & x^3-3x^2-9x-5 \\
 & -x^3 \pm x^2 \\
\hline
 & -4x^2-9x-5 \\
 & \mp 4x^2 \mp 4x \\
\hline
 & -5x-5 \\
 & \mp 5x \mp 5 \\
\hline
 & 0
\end{array}
$$

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(iii) $x^3 + 13x^2 + 32x + 20$

हल :- माना

$p(x) = x^3 + 13x^2 + 32x + 20$

$x+1$, $p(x)$ का एक गुणनखण्ड है।

$p(x) = (x+1)(x^2+12x+20)$

$= (x+1)(x+2)(x+10)$

$x = 1$ लेने पर

$p(1) = 1^3 + 13(1)^2 + 32 \times 1 + 20$

$= 1 + 13 + 32 + 20$

$p(1) = 66$

$x = -1$

$p(-1) = (-1)^3 + 13(-1)^2 + 32(-1) + 20$

$= -1 + 13 - 32 + 20$

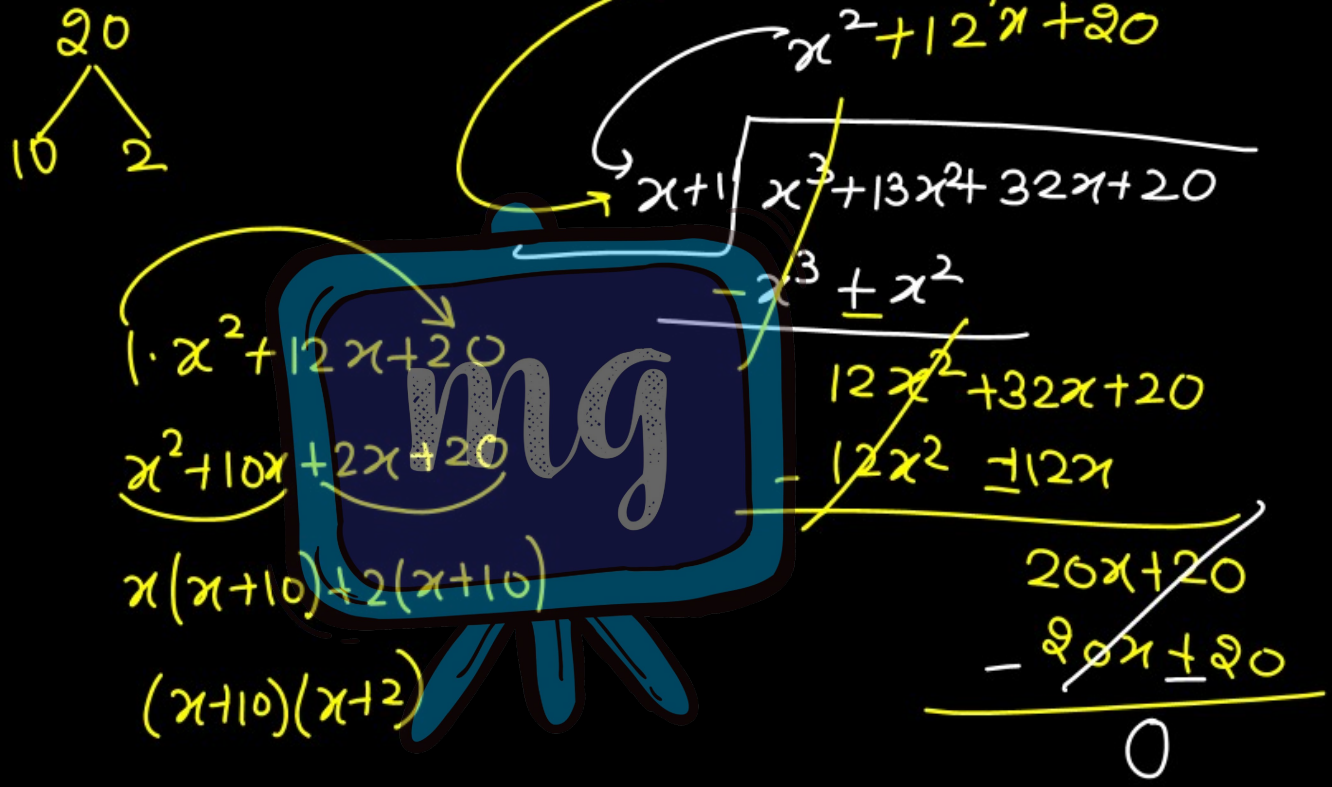
$= 33 - 33$

$p(-1) = 0$

$x+1 = 0$

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प्रश्नावली - 2.3

(iv) $2y^3 + y^2 - 2y - 1$



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बीजीय सर्वसमिकाएं

I.	$(x + y)^2 = x^2 + 2xy + y^2$
II.	$(x - y)^2 = x^2 - 2xy + y^2$
III.	$(x^2 - y^2) = (x - y)(x + y)$
IV.	$(x + a)(x + b) = x^2 + x(a + b) + ab$

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V.	$(x + y + z)^2 = x^2 + y^2 + z^2 + 2xy + 2yz + 2zx$
VI.	$(x + y)^3 = x^3 + y^3 + 3xy(x + y)$
VII.	$(x - y)^3 = x^3 - y^3 - 3xy(x - y)$
VIII.	$x^3 + y^3 + z^3 - 3xyz = (x + y + z)(x^2 + y^2 + z^2 - xy - yz - zx)$

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(ii) $(x - 3)(x + 5)$



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(ii) $\frac{25}{4}x^2 - \frac{y^2}{9}$

