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ARJUN BATCH

CLASS 9th MATHS

बहुपद

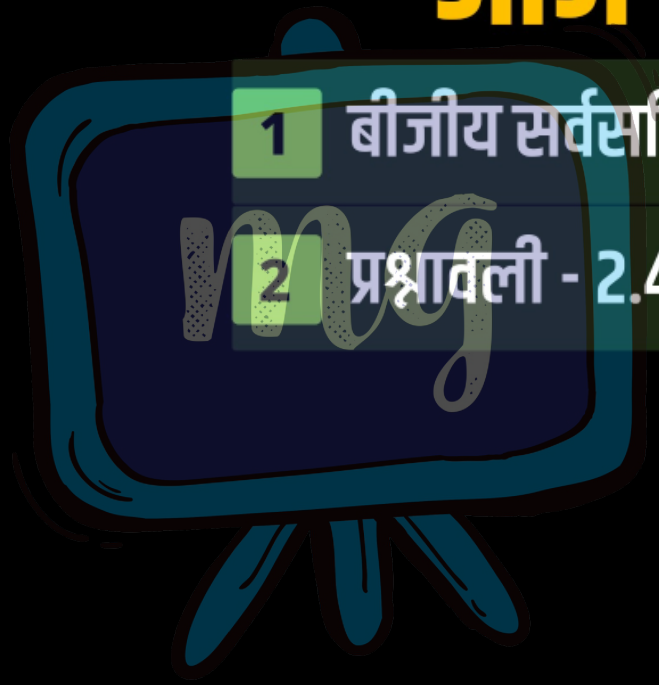
Chapter-2 | Part-6



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आज क्या पढेंगे ?



1. बीजीय सर्वसमिकाएँ
2. प्रश्नावली - 2.4

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बीजीय सर्वसमिकाएँ

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$$(x+y)^2 = x^2+2xy+y^2$$

$$(x-y)^2 = x^2+y^2-2xy$$
$$= x^2-2xy+y^2$$

$$(x+y)(x-y) = x^2-y^2$$

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$$(I + II)^2 = I^2 + II^2 + 2III$$

$$(x+3)^2 = x^2 + 3^2 + 2 \times x \times 3$$

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

$$(I - II)^2 = I^2 + II^2 - 2III$$

$$(x-4)^2 = x^2 + 4^2 - 2 \times x \times 4$$

$$= x^2 + 16 - 8x$$

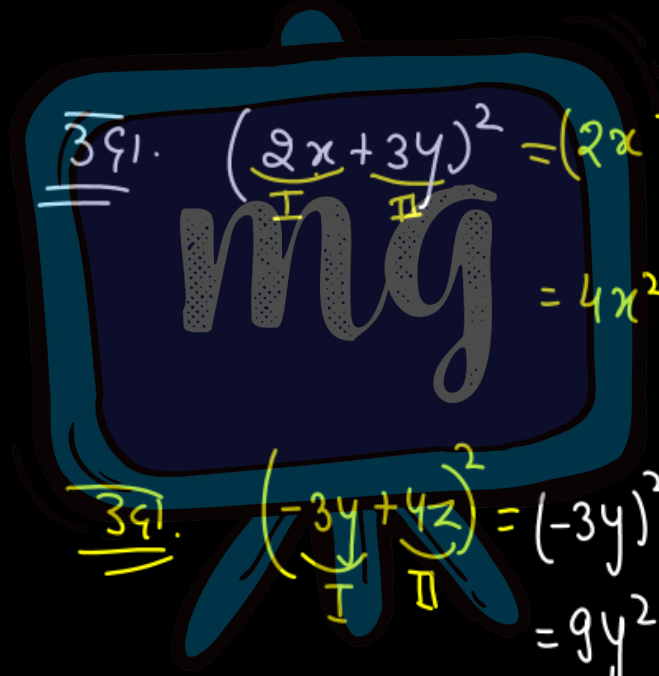
$$(I + II)(I - II) = I^2 - II^2$$

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$(x+y)^2 = x^2+2xy+y^2$

$(I+II)^2 = I^2+II^2+2\,I\,II$



391. $(\underset{I}{2x}+\underset{II}{3y})^2 = (2x)^2+(3y)^2+2\times 2x\times 3y$

$= 4x^2+9y^2+12xy$

391. $(\underset{I}{-3y}+\underset{II}{4z})^2 = (-3y)^2+(4z)^2+2\times(-3y)\times 4z$

$= 9y^2+16z^2-24z$

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$$(x-y)^2 = x^2 - 2xy + y^2$$

$$(I-II)^2 = I^2 + II^2 - 2I\,II$$

Ex: $(3x-7)^2 = (3x)^2 + (7)^2 - 2\times 3x \times 7$

$I \quad II \qquad = 9x^2 + 49 - 42x$

Ex: $\left(\frac{1}{2}x - \frac{3}{2}y\right)^2 = \left(\frac{1}{2}x\right)^2 + \left(\frac{3}{2}y\right)^2 - 2\times\frac{1}{2}x\times\frac{3}{2}y$

$I \quad II \qquad = \frac{x^2}{4} + \frac{9}{4}y^2 - \frac{3}{2}xy$

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$(x-y)(x+y) = x^2 - y^2$

39. $(2x-1)(2x+1) = (2x)^2 - 1^2$

$= 4x - 1$

$\left(\frac{5}{4}x + 3y\right)\left(\frac{5}{4}x - 3y\right) = \left(\frac{5}{4}x\right)^2 - (3y)^2$

$= \frac{25}{16}x^2 - 9y^2$

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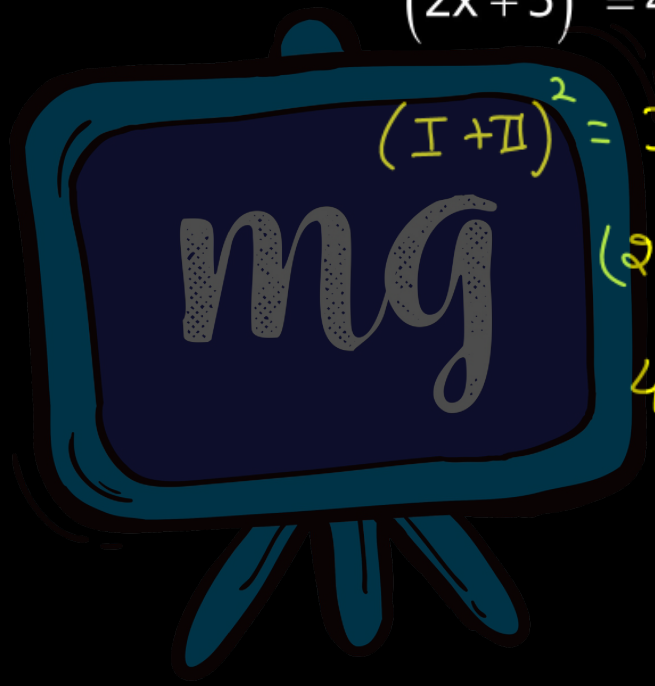
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$$(2x+5)^2 = 4x^2 + 20x + 25$$



$$(I+II)^2 = I^2 + 2III + II^2$$

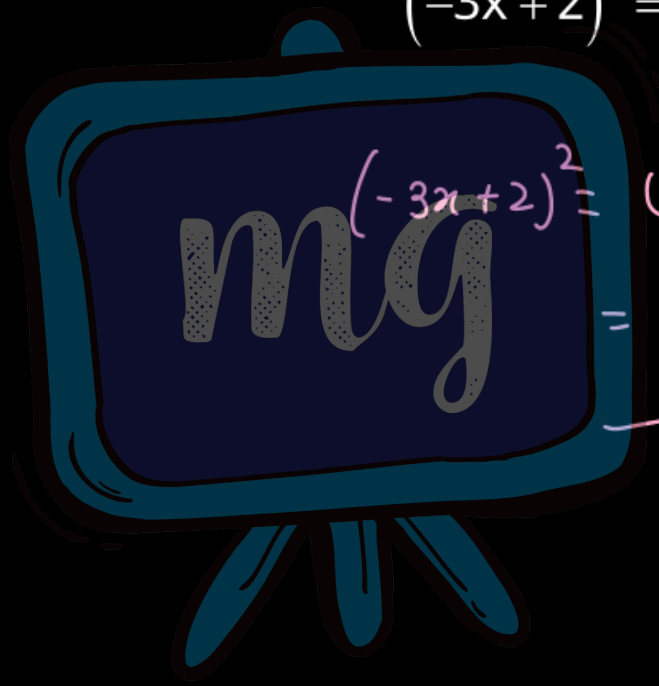
$$(2x)^2 + 2 \times 2x \times 5 + 5^2$$

$$4x^2 + 20x + 25$$

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$$(-3x+2)^2 = 9x^2 - 12x + 4$$



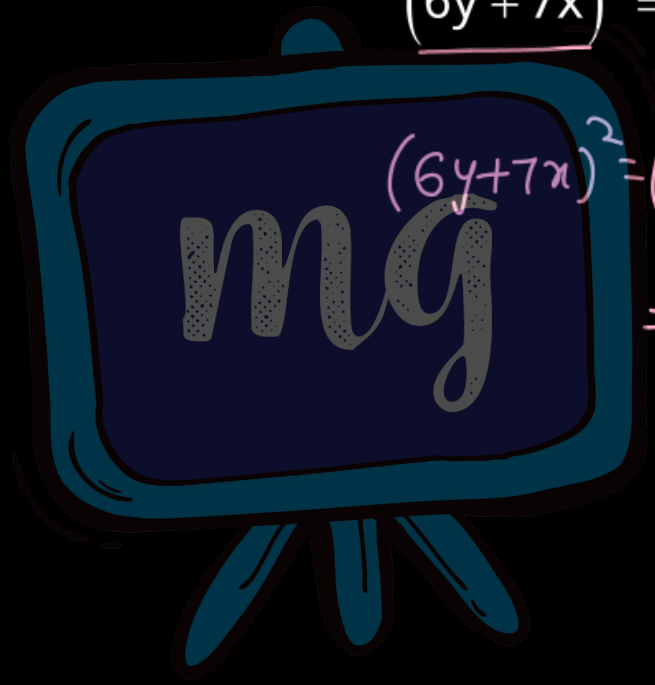
$$(-3x+2)^2 = (-3x)^2 + 2\times(2)(-3x) + 2^2$$

$$= 9x^2 - 12x + 4$$

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$$(6y+7x)^2 = 36y^2 + 84xy + 49x^2$$

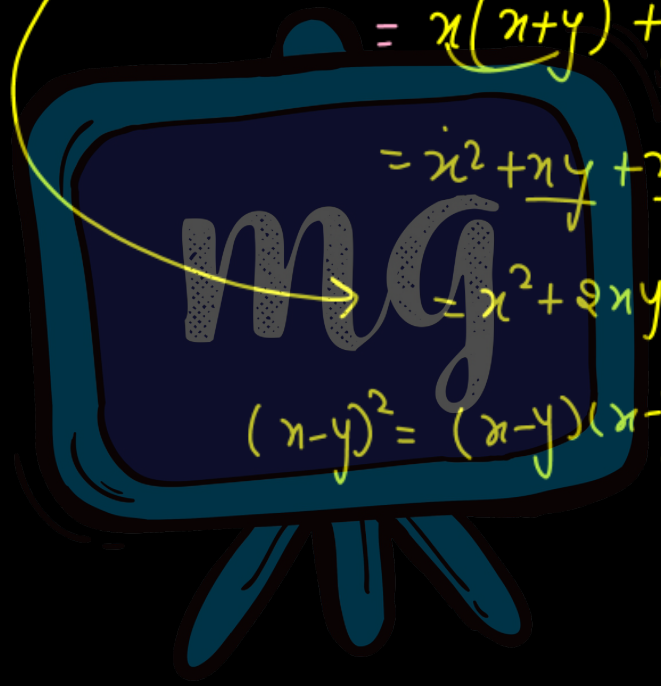


$$(6y+7x)^2 = (6y)^2 + 2 \times 6y \times 7x + (7x)^2$$

$$= 36y^2 + 84xy + 49x^2$$

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$(x+y)^2 = (x+y)(x+y)$

$= x(x+y) + y(x+y)$

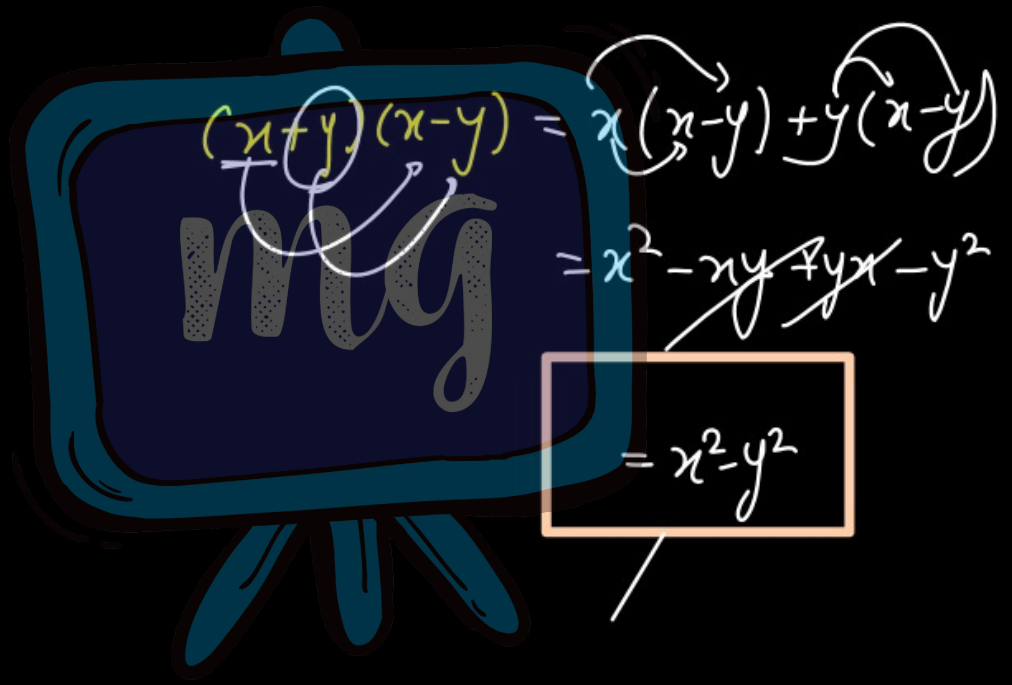
$= x^2 + xy + xy + y^2$

$= x^2 + 2xy + y^2$

$(x-y)^2 = (x-y)(x-y)$

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98×98

$$(98)^2 = (100-2)^2 = (100)^2 - 2\times100\times2 + (2)^2$$
$$= 10,000 - 400 + 4$$
$$= 9600 + 4 = 9604$$

$$\begin{array}{r} 102 \\ \times\ 98 \\ \hline \end{array}$$

$$(103)^2 = (100+3)^2 = 10,000 + 9 + 600$$
$$(100)^2 + 3^2 + 2\times100\times3$$
$$= 10,609$$

$$98 \times 102 = (100-2)\times(100+2) = 10,000 - 4$$
$$= 9996$$

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$$(a+b)^3 = a^3 + b^3 + 3ab(a+b)$$

$$(a-b)^3 = a^3 - b^3 - 3ab(a-b)$$

$$(a+b)^3 = a^3 + 3a^2b + 3ab^2 + b^3$$

$$(a-b)^3 = a^3 - 3a^2b + 3ab^2 - b^3$$

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$(a+b)^3 = a^3 + 3ab(a+b) + b^3$
$= a^3 + 3a^2b + 3ab^2 + b^3$

Q. $(x+3)^3$

$= x^3 + 3(x^2)3 + 3 \times x \times 3^2 + 3^3$

$= x^3 + 9x^2 + 27x + 27$

Q. $(2x+1)^3$

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

$= 8x^3 + 12x^2 + 6x + 1$

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$(a-b)^3 = a^3 - 3a^2b + 3ab^2 - b^3$

Q. $(2y-3)^3$

$= (2y)^3 - 3\times(2y)^2\times 3 + 3\times 2y \times (3)^2 - 3^3$

$= 8y^3 - 3\times 4y^2 \times 3 + 3\times 2y \times 9 - 27$

$= 8y^3 - 36y^2 + 54y - 27$

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

$$= (x^2+2xy+y^2)(x+y)$$

$$= x(x^2+2xy+y^2) + y(x^2+2xy+y^2)$$

$$= x^3+2x^2y+xy^2+x^2y+2xy^2+y^3$$

$$(x+y)^3 = x^3+3x^2y+3xy^2+y^3$$

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$$(x+y+z)^2 = x^2+y^2+z^2+2(xy+yz+zx)$$

$$(x+y+z)^2 = (x+y)^2 + z^2 + 2(x+y)z$$

$$= x^2+y^2+2xy+z^2+2xz+2yz$$

$$= x^2+y^2+z^2+2xy+2yz+2zx$$

$$= x^2+y^2+z^2+2(xy+yz+zx)$$

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