## VIDYA BHAWAN BALIKA VIDYA PITH शक्तिउत्थानआश्रमलखीसरायबिहार Class :-09(Maths) Date:- 18.05.2021 4. Factorize: (i) $12x^2 - 7x + 1$ Solution: Using the splitting the middle term method, We have to find a number whose sum = -7 and product = $1 \times 12 = 12$ We get -3 and -4 as the numbers $[-3+-4=-7 \text{ and } -3\times-4=12]$ $12x^2 - 7x + 1 = 12x^2 - 4x - 3x + 1$ = 4x(3x-1)-1(3x-1)= (4x-1)(3x-1)(ii) 2x<sup>2</sup>+7x+3 Solution: Using the splitting the middle term method, We have to find a number whose sum = 7 and product = $2 \times 3 = 6$ We get 6 and 1 as the numbers $[6+1 = 7 \text{ and } 6 \times 1 = 6]$ $2x^{2}+7x+3 = 2x^{2}+6x+1x+3$

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

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

## (iii) 6x<sup>2</sup>+5x-6

Solution:

Using the splitting the middle term method,

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We have to find a number whose sum = 5 and product = 6 \times -6 = -36
We get -4 and 9 as the numbers [-4+9 = 5 and -4×9 = -36]
6x^2+5x-6 = 6x^2+9x-4x-6
= 3x(2x+3)-2(2x+3)
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= (2x+3)(3x-2)

(iv) 3x<sup>2</sup>-x-4

Solution:

Using the splitting the middle term method,

We have to find a number whose sum = -1 and product =  $3 \times -4 = -12$ 

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We get -4 and 3 as the numbers [-4+3 = -1 \text{ and } -4\times3 = -12]
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3x^2 - x - 4 = 3x^2 - x - 4
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$$= 3x^2 - 4x + 3x - 4$$

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= x(3x-4)+1(3x-4)
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= (3x-4)(x+1)
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## 5. Factorize:

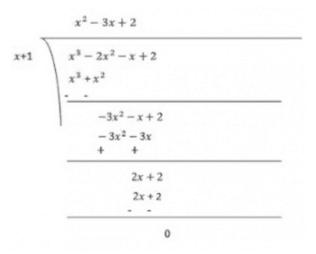
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(i) x<sup>3</sup>-2x<sup>2</sup>-x+2
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Solution:

Let  $p(x) = x^3 - 2x^2 - x + 2$ Factors of 2 are  $\pm 1$  and  $\pm 2$ Now,  $p(x) = x^3 - 2x^2 - x + 2$  $p(-1) = (-1)^3 - 2(-1)^2 - (-1) + 2$ = -1 - 2 + 1 + 2

= 0

Therefore, (x+1) is the factor of p(x)



Now, Dividend = Divisor × Quotient + Remainder  $(x+1)(x^2-3x+2) = (x+1)(x^2-x-2x+2)$ = (x+1)(x(x-1)-2(x-1))= (x+1)(x-1)(x-2)(ii) x<sup>3</sup>-3x<sup>2</sup>-9x-5 Solution: Let  $p(x) = x^3 - 3x^2 - 9x - 5$ Factors of 5 are  $\pm 1$  and  $\pm 5$ By trial method, we find that p(5) = 0So, (x-5) is factor of p(x)Now,  $p(x) = x^3 - 3x^2 - 9x - 5$  $p(5) = (5)^3 - 3(5)^2 - 9(5) - 5$ = 125-75-45-5 = 0 Therefore, (x-5) is the factor of p(x)

Now, Dividend = Divisor × Quotient + Remainder

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

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

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