

DESCOMPUNEREA ÎN FACTORI METODA GRUPĂRII TERMENILOR

CLASA A VIII A

$$5x^3 + 5x^2 - 4x - 4 = ?$$

$$x^3 - 16x = ?$$

$$x^2 + 7x + 6 = ?$$

1. Descompuneti în factori primi:

$$\overbrace{ab^2 + b^2a + ac + bc}^{\substack{a^2b + b^2a \\ ab(a+b) + c(a+b)}} = \underline{(a+b)(ab+ c)}$$

a) $\frac{x^3 + 3x^2 + 2x + 6}{1} = \cancel{x^2} \cdot \cancel{x^1} + 3 \cdot \cancel{x^2} + 2 \cdot x + 2 \cdot 3 =$
 $\cancel{x^2}(x+3) + \underline{2(x+3)} = (x+3) \cdot (\cancel{x^2} + 2)$

b) $\frac{x^3 - x^2 - 4x + 4}{a^2 - b^2 = (a-b)(a+b)} = \cancel{x^2} \cdot \cancel{x} - \cancel{1} \cdot \cancel{x^2} - 4 \cdot x + 4 =$
 $= \cancel{x^2}(x-1) - 4(x-1) = (x-1)(\cancel{x^2} - 4) =$
 $= (x-1)(x^2 - 2^2) = (x-1)(x-2)(x+2).$

c) $4x^3 + \cancel{8x^2} - 25(x+2) = 4x^2(x+2) - \cancel{25}(x+2) = (x+2)(4x^2 - \cancel{25})$
 $= (x+2)[(2x)^2 - 5^2] = (x+2)(2x-5)(2x+5).$

d) $x^3 - 16x = x(x^2 - \cancel{16}) = x(x^2 - 4^2) = x(x-4)(x+4).$

e) $x^3 - \cancel{x^2} - 9x + 9 = x^2(x-1) - \cancel{9}(x-1) = (x-1)(x^2 - \cancel{9})$
 $= (x-1)(x^2 - 3^2) = (x-1)(x-3)(x+3)$

2. Descompuneti în factori primi

a) $x^2 + 4x + 3 = \cancel{x^2} + \cancel{x} + 3\cancel{x} + 3 = x(\cancel{x+1}) + 3(\cancel{x+1})$
 $\underline{\underline{x+3x}}$
 $= (x+1) \cdot (x+3)$.

Caut 2 numere care înmulțite să dea 3 și adunate 6.

b) $x^2 + \cancel{6x} + (\cancel{8}) = \cancel{x^2} + \cancel{2x} + 4\cancel{x} + 8 = x(\cancel{x+2}) + 4(\cancel{x+2})$
 $\underline{\underline{2+4}} \quad \underline{\underline{2 \cdot 4}}$
 $= (x+2)(x+4)$.

c) $x^2 - \cancel{6x} + \cancel{5} = \cancel{x^2} - \cancel{x} - 5\cancel{x} + \cancel{5} = x(\cancel{x-1}) - 5(\cancel{x-1})$
 $\underline{\underline{-1-5}} \quad \underline{\underline{1 \cdot 5}}$
 $= (x-1) \cdot (x-5)$.

$$d) \quad x^2 + 16x + 63 = \underbrace{x^2 + 7x + 9x + 63}_{\begin{array}{l} 9x+9x \\ x \end{array}} = \underbrace{x^2 + 7x + 9x + 63}_{\begin{array}{l} 9x+9 \\ 63+9 \\ \hline 7 \end{array}} = x(x+7) + 9(x+7) = (x+7)(x+9).$$

$$e) \quad x^2 - 11x + 28 = \underbrace{x^2 - 4x - 7x + 28}_{\begin{array}{l} -4x-7x \\ 4 \cdot 7 \end{array}} = x(x-4) - 7(x-4) = (x-4)(x-7).$$

$$f) \quad x^2 - 10x + 16 = \underbrace{x^2 - 2x - 8x + 16}_{\begin{array}{l} -2x-8x \\ -4x-4x \\ \hline \cancel{-4x-\cancel{4x}} \end{array}} = x(x-2) - 8(x-2) = (x-2)(x-8).$$

a) $x^2 - 6x - 27 = \cancel{x^2 + 3x - 9x - 27} = x(x+3) - 9\underbrace{(x+3)}_{-27 : (-9) = +3} = (x+3)(x-9)$

b) $x^2 + 3x - 4 = \cancel{x^2 - 1x + 4x - 4} = x(\cancel{x-1}) + 4(\cancel{x-1}) = (x-1)(x+4)$

c) $x^2 (+5x) (-14) = \cancel{x^2 - 2x + 7x - 14} = x(\cancel{x-2}) + 7(\cancel{x-2}) = (x-2)(x+7)$

d) $x^2 - 8x + 7 = \cancel{x^2 - x - 7x + 7} = x(\cancel{x-1}) - 7(\cancel{x-1}) = (x-1)(x-7)$



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