

Polynomial Review

$$\text{ex 1 } (2x+3)(x^2-4x-7) = 2x^3 - 8x^2 - 14x + 3x^2 - 12x - 21$$

$$\text{ex 2 } (3x+5)(3x-5) = 9x^2 - 15x + 15x - 25 = 9x^2 - 25$$

$$\text{ex 3 } (a+b)(a-b) = a^2 - b^2$$

$$\text{ex 4 } (4x+3)^2 = (4x+3)(4x+3) = 16x^2 + 24x + 9$$

$$\text{ex 5 } (a+b)^2 = (a+b)(a+b) = a^2 + ab + ab + b^2 = a^2 + 2ab + b^2$$

$$\text{ex 6 } (5-4x)^2 = (5-4x)(5-4x) = 25 - 20x - 20x + 16x^2 = 25 - 40x + 16x^2$$

$$\text{ex 7 } (a-b)^2 = (a-b)(a-b) = a^2 - ab - ab + b^2 = a^2 - 2ab + b^2$$

$$\text{ex 8 } (3x^2 - 2xy + 4y^2) - (6x^2 - 4xy + 5y^2) = -3x^2 + 2xy - y^2$$

FACTORIZING - Seven Rules

Rule #1 - GCF - Always take out the greatest common factor first!

$$\text{ex 9 - Factor completely: } 6x^2y^3 - 10xy^3 = 2xy^3(3x - 5y^2)$$

$$\text{ex 10 - Factor completely: } 3a^2 + 9a^2b = 3a^2(1 + 3b)$$

$$\text{ex 11 - Factor completely: } (x+y)a^2b^3c + (x+y)a^2bc^4 = (x+y)a^2bc(a^2b^2 + c^3)$$

Rule #2 - Difference of two squares - $a^2 - b^2 = (a+b)(a-b)$

$$\text{ex 12 - Factor completely: } 25 - x^2 = (5+x)(5-x)$$

$$\text{ex 13 - Factor completely: } 9x^2 - 49y^2 = (3x+7y)(3x-7y)$$

$$\text{ex 14 - Factor completely: } 3x^2 - 12 = 3(x^2 - 4) = 3(x+2)(x-2)$$

ex 15 - Factor completely (very tricky; be careful with this one):

$$36x^2 - 100 = (6x+10)(6x-10) \\ = 2(3x+5) \cdot 2(3x-5) = 4(3x+5)(3x-5)$$

A.28 - sheet on back
 $\rightarrow 4(9x^2 - 25) = 4(3x+5)(3x-5)$