

Warm up:

Perform each indicated operation:

1.) $(3x^2 + 5x - 6) + (2x + 3 - x^2)$

$$2x^2 + 7x - 3$$

2.) $(7x^3 + 8x^2 - 4x) - (x^3 - 2x^2 + 3x)$

$$6x^3 + 10x^2 - 7x$$

3.) $(x + 7)(x^2 - 3x + 1)$

$$x^3 + 4x^2 - 20x + 7$$

	x^2	$-3x$	$+1$
x	x^3	$-3x^2$	$+1x$
$+7$	$+7x^2$	$-21x$	$+7$

There are 3 main types of factoring that we are familiar with. Do you remember what they are??

Method 1: GCF

- ✓ Identify the largest number that divides evenly into **ALL** parts of your polynomial. Next, find the variable(s) all of your terms have in common... look for the **SMALLEST EXPONENT**. Rewrite these common terms **IN FRONT** of the parenthesis (this is your GCF). Lastly, divide each term by your GCF and write the "leftovers" **inside** the parentheses.

Ex: $\frac{4x^2}{4x} + \frac{8x}{4x}$

$$4x(x + 2)$$

Method 2: DOTS

- ✓ Start by drawing your two sets of parentheses. Square root the first term and put that in each set of parentheses (in the first position), then you square root the second term and put that in each set of parentheses (in the second position). Finally you put a + in one set of parentheses and a - in the other set (remember for this method, your signs will **ALWAYS** be different!).

Ex: $x^2 - 25$

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

Tri

Method 3: _____

- ✓ Start by drawing your two sets of parentheses and putting your variables in. Then determine what the signs are that should go in each set of parentheses. Finally you find the two numbers that will multiply to give you the third term and combine (add) to give you the middle term.

Ex: $x^2 - 5x - 24$

AM

$$(x - 8)(x + 3)$$

$$\begin{array}{r} 24 \\ 1, 24 \\ 2, 12 \\ \underline{3, 8} \\ 4, 6 \end{array}$$

More examples:

Method: GCF

$$\frac{5x^2}{5} - \frac{15x}{5} + \frac{25}{5}$$

$$5(x^2 - 3x + 5)$$

Method: DOTS

$$x^2 - 49$$

$$(x - 7)(x + 7)$$

Method: Tri

$$x^2 + 8x - 20$$

AM

$$(x + 10)(x - 2)$$

Method: DOTS

$$4x^2 - 9y^4$$

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

Method: Tri

$$x^2 - 11x + 28$$

$$(x - 4)(x - 7)$$

Method: GCF

$$\frac{4a^3b}{ab} - \frac{2a^2b^2}{ab} + \frac{ab^3}{ab}$$

$$\begin{array}{r} 28 \\ 1, 28 \\ 2, 14 \\ \underline{4, 7} \end{array}$$

$$ab(4a^2 - 2ab + b^2)$$