3.6 Factoring Trinomials - Special Cases

Math 10 **Factoring Trinomials – Special Cases**

Perfect-square trinomials have the form $a^2 + 2ab + b^2$ or $a^2 - 2ab + b^2$. Their factored forms are:

$a^2 + 2ab + b^2 = (a + b)(a + b)$ $= (a+b)^2$ $\quad$ $a^2 - 2ab + b^2 = (a - b)(a - b)$ $= (a-b)^2$

Examples:

$x^2 + 10x + 25 =$ $(x+5)(x+5)$ $= (x+5)^2$

$y^2 - 18y + 81 =$ $(y-9)(y-9)$ $= (y-9)^2$

A polynomial of the form $a^2 - b^2$ is called a **difference of squares**. Its factored form is $(a + b)(a - b)$.

Factor each difference of squares using the method of grouping. Then compare the answer to the polynomial. Can you see the pattern?

$x^2 - 4$ product: -4 sum: 0 $\quad -2, 2$

$= x^2 + 0x - 4$

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

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

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

$x^2 - 81$ $= (x+9)(x-9)$

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

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

$x^4 - 16$

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

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

$4x^2 - 25$

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

$49x^2 - 36$

$= (7x+6)(7x-6)$

$100x^2 - 9y^2$

$= (10x+3y)(10x-3y)$

$2x^2 - 50y^2$

$= 2(x^2 - 25y^2)$

$= 2(x+5y)(x-5y)$

Assignment: p.99 #2bc, 3bc, 5, 7ag