Special Factoring Patterns

KEY CONCEPT *For Your Notebook*

Special Factoring Patterns

Pattern Name	Pattern	Example
Difference of Two Squares	$a^2 - b^2 = (a + b)(a - b)$	$x^2 - 4 = (x + 2)(x - 2)$
Perfect Square Trinomial	$a^2 + 2ab + b^2 = (a + b)^2$	$x^2 + 6x + 9 = (x + 3)^2$
	$a^2 - 2ab + b^2 = (a - b)^2$	$x^2 - 4x + 4 = (x - 2)^2$

Example:

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

$81x^2y^4 - 1 = (9xy^2+1)(9xy^2-1)$

PST:

must be +

$x^2 + 14x + 49 = (x+7)^2$ or $(x+7)(x+7)$

perfect square $\sqrt{x^2} = x$

perfect square $\sqrt{49} = 7$

$2 \cdot 7x$

Must be double the product of the square roots of 1st and last terms.

$y^2 - 6y + 9 = (y-3)^2$ or $(y-3)(y-3)$

$\sqrt{y^2} = y$ $\quad 2 \cdot 3y$ $\quad \sqrt{9} = 3$

$8x^2 - 40x + 50$

$2(4x^2 - 20x + 25) = 2(2x-5)^2$

$\sqrt{4x^2} = 2x$ $\quad \sqrt{25} = 5$

$2 \cdot 2x \cdot 5$