

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:

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

$\sqrt{x^2} = x$ perfect square $\sqrt{49} = 7$
 $2 \cdot 7x$ must be + perfect square

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

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

$\sqrt{y^2} = y$ $2(3 \cdot y) = 6y$ $\sqrt{9} = 3$
 $y^2 - 3y - 3y + 9$

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

$\sqrt{4x^2} = 2x$ $2(10x) = 20x$ 5