Name _____ Class _____ Date _____

Reteaching 9-7

Factoring Special Cases

OBJECTIVE: Factoring the difference of two squares

MATERIALS: None

- The difference of two squares is written $a^2 - b^2$. Note that both terms must be perfect squares.
- The **factors** of the difference of two squares, $a^2 - b^2$ are $(a + b)$ and $(a - b)$. Once you have determined that the binomial you want to factor is the difference of two squares, you can factor by using the formula $a^2 - b^2 = (a + b)(a - b)$.

Examples

Factor $a^2 - 16$.

$a^2 - 16$	← **Both terms are perfect squares.**
$a^2 - 4^2$	← **Rewrite 16 as 4^2.**
$a^2 - b^2 = (a + b)(a - b)$	← **Write the formula.**
$a^2 - 4^2 = (a + 4)(a - 4)$	← **Replace b with 4.**
$(a + 4)(a - 4)$	← **Solution**

Factor $3a^2 - 75$.

$3a^2 - 75$	← **Both terms are *not* perfect squares.**
$3(a^2 - 25)$	← **Both $3a^2$ and 75 are divisible by 3. Factor out 3.**
$3(a^2 - 5^2)$	← **25 is a perfect square. Rewrite 25 as 5^2.**
$a^2 - b^2 = (a + b)(a - b)$	← **Write the formula.**
$3(a^2 - 5^2) = 3(a + 5)(a - 5)$	← **Replace b with 5.**
$3(a + 5)(a - 5)$	← **Solution**

Exercises

Factor each expression.

1. $a^2 - 36$	**2.** $x^2 - 64$	**3.** $y^2 - 49$
4. $4x^2 - 25$	**5.** $9y^2 - 16$	**6.** $25x^2 - 64$
7. $3x^2 - 12$	**8.** $2x^2 - 18$	**9.** $4x^2 - 16$
10. $x^2 - 225$	**11.** $x^2 - 144$	**12.** $16x^2 - 49$
13. $6x^2 - 54$	**14.** $7x^2 - 112$	**15.** $5x^2 - 125$