Name _____ Class _____ Date _____

Reteaching 8-7

Factoring Special Cases

OBJECTIVE: Factoring the difference of two squares

MATERIALS: None

- The difference of two squares is written $\boldsymbol{a^2 - b^2}$. Note that both terms must be perfect squares.
- The **factors** of the difference of two squares, $\boldsymbol{a^2 - b^2}$ are $\boldsymbol{(a + b)}$ and $\boldsymbol{(a - b)}$. 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.** $5x^2 - 125$

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