NAME _____ DATE _____

Study Guide

Student Edition
Pages 581–586

Factoring Differences of Squares

Use the difference of squares to factor polynomials.

Difference of Squares	$a^2 - b^2 = (a - b)(a + b) = (a + b)(a - b)$

Example 1: Factor $4y^2 - 81z^2$.

$4y^2 - 81z^2 = (2y)^2 - (9z)^2$ **$2y \cdot 2y = 4y^2$ and $9z \cdot 9z = 81z^2$**

$= (2y - 9z)(2y + 9z)$ **Use the difference of squares.**

In some binomials you have to factor a GCF before you can factor the difference of squares.

Example 2: Factor $50a^2 - 72$.

$50a^2 - 72 = 2(25a^2 - 36)$ **The GCF is 2.**

$= 2(5a - 6)(5a + 6)$ **Use the difference of squares.**

State whether each binomial can be factored as a difference of squares.

1. $a^2 - b^2$ **2.** $x^2 + y^2$ **3.** $a^2 - 36$ **4.** $2p - \frac{1}{9}$

5. $\frac{1}{2}m^2 + \frac{1}{4}n^2$ **6.** $\frac{49}{289}x^2 - 1$ **7.** $0.16m^2 + 0.25n^2$ **8.** $225b^2 - a^2$

9. $a - 16$ **10.** $15x^2 + 5$ **11.** $9y^2 - 4x^2$ **12.** $-p^2 + 9q^2$

Factor each polynomial, if possible. If the polynomial cannot be factored, write prime.

13. $m^2 - 16n^2$ **14.** $4a^2 - 9b^2$ **15.** $x^2 - 64$

16. $-81 + a^4$ **17.** $m^6 - 16n^4$ **18.** $-2 + 2y^2$

19. $p^2q^2 - \frac{1}{16}$ **20.** $\frac{1}{4}z^4 - 25$ **21.** $\frac{2}{3}x^2 - 9$

22. $12x^2 - 27y^2$ **23.** $6 - 54z^2$ **24.** $(x + y)^2 - w^2$

25. $3x^4 - 75$ **26.** $(n + 7)^2 - 1$ **27.** $2p^4 - 32q^4$