



Learning Goals:

- To identify and factor the difference of two squares.
- To identify and factor perfect square trinomials.
- To find the solutions to quadratic equations by factoring.

Notes (Page 752)

1. Multiply the binomials.

- a. $(x - 4)(x + 4) =$ _____ Binomial or Trinomial?
- $(x + 4)(x + 4) =$ _____ Binomial or Trinomial?
- $(x - 4)(x - 4) =$ _____ Binomial or Trinomial?
- b. $(3x - 1)(3x + 1) =$ _____ Binomial or Trinomial?
- $(3x + 1)(3x + 1) =$ _____ Binomial or Trinomial?
- $(3x - 1)(3x - 1) =$ _____ Binomial or Trinomial?

2. What patterns do you see? Hint: Look at the "+" and "-" signs?

3. Multiply these binomials. Do you recognize the pattern?

- $(ax - b)(ax + b) =$ _____
- $(ax + b)(ax + b)$ or $(ax + b)^2 =$ _____
- $(ax - b)(ax - b)$ or $(ax - b)^2 =$ _____

4. Group the quadratic equations in #1 into two categories: the Difference of Two Squares or Perfect Square Trinomials.

Difference of Two Squares

Perfect Square Trinomials

5. Factor each difference of two squares.

a. $x^2 - 4 =$ _____

b. $4x^2 - 9 =$ _____

c. $x^4 - 16 =$ _____

Some expressions can be factored even further! If so, keep factoring!

$$(x^4 - 16) = (x^2 + 4)(x^2 - 4) = (x^2 + 4)(x + 2)(x - 2)$$

$$(x^4 - y^4) = (x^2 + y^2)(x^2 - y^2) =$$

6. Try to factor $x^2 + 49$. What do you get?

7. Factor each perfect square trinomial.

$$x^2 + 10x + 25 =$$
 _____ or _____

$$x^2 - 24x + 144 =$$
 _____ or _____

$$4x^2 + 20x + 25 =$$
 _____ or _____

$$36x^2 - 36x + 9 =$$
 _____ = _____

$$16x^4 - 1 =$$
 _____ = _____

8. Calculate the roots of each quadratic equation.

a. $x^2 - 12x + 36 = 0$

b. $9x^2 - 25 = 0$

9. Calculate the zeros of each function.

a. $f(x) = 25x^2 + 20x + 4$

b. $f(x) = 9x^2 + 1$

c. $f(x) = 9 - 24x + 16x^2$

d. $f(x) = \frac{1}{4}x^2 - 1$