

Pre-Algebra

Aim: How do we factor a polynomial that is a difference of two squares (DOTS)?

Do Now: Multiply each pair of binomials.

a) $(x-2)(x+2)$

b) $(x-5)(x+5)$

c) $(x+4)(x-4)$

Factoring the Difference of Two Squares ("DOTS")

1) In order to factor DOTS, you must _____ DOTS.

$x^2 - 9$ is a difference of two squares (DOTS)

Both x^2 and 9 are _____. Since both squares are being _____, this expression is known as a **difference of two squares** (DOTS).

Remember:

An algebraic term is a perfect square when the numerical coefficient (the number in front of the variable) is a _____ and the exponent of the variable(s) is an _____.

2) Once you recognize DOTS, you can _____ DOTS.

Factor $x^2 - 9$ by taking the square root of each perfect square.

What is the square root of x^2 ? _____

What is the square root of 9 ? _____

Let's list the perfect squares...

3) Using each root, create a sum and difference.

The factors are _____ and _____.

Therefore, $x^2 - 9$ written in factored form is _____.

Factor:

1) $x^2 - 100$

2) $x^2 - 81$

3) $49 - x^2$

4) $x^2 - y^2$

5) $16x^2 - 25$

6) $25x^2 - 36y^2$

7) $81x^2 - 100w^2$

8) $4x^2 - 16$

9) $x^4 - 144$

10) Is $x^2 + 4$ factorable? Explain.11) Is $x^9 - 4$ factorable? Explain.

With your group, determine if the polynomials are factorable or not. If the polynomial is factorable, factor it.

Partner Activity: Factor the polynomial if factorable.

1) $x^2 - 36$ _____

2) $4x^2 - 25$ _____

3) $x^2 + 1$ _____

4) $x^2 - 2$ _____

5) $64x^2 - y^4$ _____

6) $16x - 9y^2$ _____

7) $100x^2 + 49$ _____

8) $x^6 - y^{10}$ _____