

## THE DIFFERENCE OF SQUARES

**Formula:**  $x^2 - y^2 = (x + y)(x - y)$

This is for two squares that are subtracted. The sum (addition) of two squares is **NOT** factorable.

**Example 1:**  $x^2 - 9 = 0$   
 $x^2 - 3^2 = 0$   
 $(x + 3)(x - 3) = 0$   
 $x + 3 = 0$  or  $x - 3 = 0$   
 $x = -3$  or  $x = 3$

break down to squares  
factor using formula  
set each factor = 0  
solve for X

**Example 2:**  $25x^2 - 81 = 0$   
 $(5x)^2 - 9^2 = 0$   
 $(5x + 9)(5x - 9) = 0$   
 $5x + 9 = 0$  or  $5x - 9 = 0$   
 $5x = -9$  or  $5x = 9$   
 $x = -9/5$  or  $x = 9/5$

break down to squares  
factor using formula  
set each factor = 0  
solve for X

**Example 3:**  $x^2 + 4 = 0$

The sum of two squares is **not factorable**.

**Example 4:**  $x^4 - 81 = 0$   
 $x^4 - 9^2 = 0$   
 $(x^2)^2 - 9^2 = 0$   
 $(x^2 - 9)(x^2 + 9) = 0$   
 $(x - 3)(x + 3)(x^2 + 9) = 0$   
 $x - 3 = 0$  or  $x + 3 = 0$  or  $x^2 + 9 = 0$   
 $x = 3$  or  $x = -3$

break down to exponents  
break down to squares  
factor using formula  
why?  
(not factorable Ex. 3)  
are the **ONLY** answers!