6-2 Differences of Two Squares

What is a perfect Square?

- A number with two factors of the same #.

The first 15 perfect squares are:

1	121
4	144
9	169
16	196
25	225
36	
49	
64	
81	
100	

Variables can be perfect squares too!

If a variable has an even power (exponent), it is a perfect square.

x^2 x^6 x^{10} x^{14}

x^4 x^8 x^{12} x^{16}

The difference of two squares is just that...

Two perfect squares and a subtraction sign.

(Minus)

Key Questions:

(negative)

Is the polynomial the difference of two squares?

$u^2 - v^2$ Yes.

$x^2 - y^3$ No.

$x^2 + y^2$ No

$-1 + x^2$ Yes

↪ $x^2 - 1$

The difference of two squares can be factored.

The factors will be in two sets of parentheses - a binomial in each.

(+)(-)

or

(-)(+)

When factoring, factor out a GCF (if possible) first!

Factor:

$x \cdot x \quad 4 \cdot 4$

$x^2 - 16$

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

HELLO OR

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

$5x \cdot 5x \quad 2 \cdot 2$

$25x^2 - 4$

$(5x+2)(5x-2)$

or

$(5x-2)(5x+2)$

$-64y^2 + 25x^2$

$5x \cdot 5x \quad 8y \cdot 8y$

$25x^2 - 64y^2$

$(5x+8y)(5x-8y)$

$\frac{32x^2}{2} - \frac{50y^2}{2}$ GCF: 2

$2(16x^2 - 25y^2)$

$2(4x+5y)(4x-5y)$