

## 1.4 Difference of Squares and Review of All Factoring

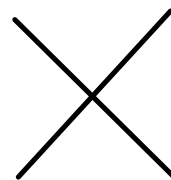
Starter:

1.  $(x^2 - 7x + 5)(7x^2 + 7x - 6)$

2.  $3p^2 - 10p + 8$



3.  $3x^2 + 9x - 210$



## Calendar Math

Basic Form: Quadratic  $f(x) = a(x - h)^2 + k$

**a:** Vertical stretch/shrink

$|a| > 1$  vertical stretch

$|a| < 1$  vertical shrink

**h:** Horizontal Shift

$(x - h)$  moves to the right

$(x + h)$  moves to the left

**k:** Vertical Shift

+ k moves up

- k moves down

Reflection: Negative in front of **a** reflects the graph over the x-axis

Absolute Value:  $f(x) = a|x - h| + k$

Square Root:  $f(x) = \sqrt{x - h} + k$

Calendar Math:

How did the function transform?

example 1.  $y = |x - 3|^2 + 5$

$(3, 5)$

$$f(x) = a(x-h)^2 + k$$

3 units right +  
5 units up

Example 2.  $y = -|x + 2| - 4$

down

2 units left

4 units down

Example 3:  $y = \sqrt{x - 1} + 4$

1 unit right +

4 units up

$$\begin{aligned} 2^2 &= 4 = 2 \\ 3^2 &= 9 = 3 \\ 4^2 &= 16 = 4 \end{aligned}$$

$$a^2 - b^2 = (a - b)(a + b)$$

$$\begin{aligned} \sqrt{121} &= 11 \\ \sqrt{144} &= 12 \\ \sqrt{169} &= 13 \end{aligned}$$

$$\begin{aligned} \sqrt{4} &= 2 \\ \sqrt{9} &= 3 \\ \sqrt{16} &= 4 \\ \sqrt{25} &= 5 \\ \sqrt{36} &= 6 \\ \sqrt{49} &= 7 \\ \sqrt{64} &= 8 \\ \sqrt{81} &= 9 \\ \sqrt{100} &= 10 \end{aligned}$$

1.  $4x^2 - y^2$

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

$$4x^2 - 2xy + \cancel{2xy} - y^2$$

$$7. \quad 4x^2 - 25y^2$$

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

$$4x^4 - y^4$$

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

$$4x^4 - y^4$$

$$(2x^3 + y^2)(2x^3 - y^2)$$

$$12. \quad \frac{12x^2}{3} - \frac{75}{3}$$

$$3(4x^2 - 25)$$

$$3(2x + 5)(2x - 5)$$

17. What does the value  $a$  do to a function that is transformed?

$a$ : Vertical Stretch/Shrink



21. How did the function transform?

$$y = \frac{1}{2}(x - 2)^2 - 4$$

$|\frac{1}{2}| < 1$  Shrink

2 units right  
4 units down