Happy Monday, October 3!

Do Now:

Solve the following:

$$i^2 = -1$$

$$\sqrt{-12} =$$

$i\sqrt{12}$

$i\sqrt{4 \cdot 3}$

$2i\sqrt{3}$

The max amount of bobby pins in my hair at one time for homecoming is 101

$12i = \sqrt{-144}$

Oct 3-7:46 AM

Learning Target:

WRITING EQUATIONS

I can write an equation given the roots of the polynomial.

Oct 3-8:17 AM

Reminder:

Solve the following for its roots:

$y = 2x + 1$

$$x^2 + 8x + 15 = y$$

Set = 0 : $x^2 + 8x + 15 = 0$

Zero Product Property: $(x + 5)(x + 3) = 0$

$x + 5 = 0$ or $x + 3 = 0$

$\boxed{x = -5 \qquad x = -3}$

Oct 3-8:18 AM

$$x^2 + 8x + 15 = y$$

$$x^2 + 8x + 15 = 0$$

$$(x + 3)(x + 5) = 0$$

distribute

$$x + 3 = 0$$

$$x + 5 = 0$$
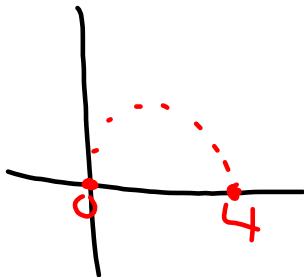
$$x = -3, -5$$

Oct 3-8:20 AM

Ronin is on a pogo stick and hops from the start 4 feet.

Write an equation to model his path.

$x = 0, 4$

$(x - 0)(x - 4)$ — Write as factors
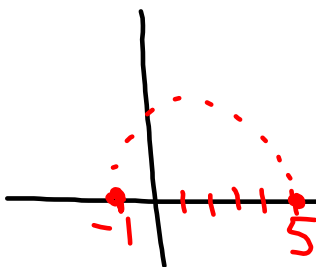
$x(x - 4)$ — Simplify

$x^2 - 4x$ — dist.

$\boxed{y = x^2 - 4x}$

$= y$

Oct 3-8:22 AM

Logan was jealous of Ronin's awesome pogo skills, so he started one foot back and hopped a total of 6 feet. Write an equation to model his path.

$x = -1, 5$

$(x + 1)(x - 5)$

$x^2 + x - 5x - 5$ — CLT

$\boxed{y = x^2 - 4x - 5}$

Oct 3-8:23 AM

What about imaginary roots?

$$x = 2i \, , -2i$$

Always come
with a friend

$$(x-2i)(x+2i)$$

$$x^2 - 2ix + 2ix - 4i^2$$

$$x^2 - 4i^2$$

$$y = x^2 + 4$$

Oct 3-8:24 AM

$$x = 2 \, , \, 3i$$

$$x = 2, 3i, -3i$$

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

$$x^2 - 3ix + 3ix - 9i^2$$

$$(x-2)(x^2+9)$$

$$y = x^3 + 9x - 2x^2 - 18$$

Oct 3-11:44 AM

$x = 3, 2i$

Since they come in pairs, I know:

$x = 3, 2i, -2i$

The $(x - 3)(x - 2i)(x + 2i)$

Multiply:

$(x - 3)(x^2 + 2i - 2i - 4i^2)$

Simplify:

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

Multiply:

$x^3 - 3x^2 + 4x - 12 = y$

Oct 3-9:40 AM

Double Roots???

$$x = 2, 2$$

$$(x - 2)(x - 2)$$

$$x^2 - 2x - 2x + 4$$

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

Oct 3-9:40 AM

Exit Slip:

Find the equation if the roots are:

$$x = 1, i$$

Oct 3-11:10 AM