

Building Polynomials from Known Attributes



By the end of this lesson, I will be able to answer the following questions...

1. How do I build polynomials from ***zeros***?
2. What is a ***conjugate***?
3. What are the properties of a conjugate and how do I use them to build polynomials?
4. What is the ***irrational conjugate rule*** and ***complex conjugate rule***

Vocabulary

Conjugates

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

$$(x-\sqrt{5})(x+\sqrt{5})$$

$$(x-5i)(x+5i)$$

What is a pattern you notice?

Prerequisite Skills with Practice

YES



$$\sqrt{a} \cdot \sqrt{b} = \sqrt{a \cdot b}$$

$$\sqrt{2} \cdot \sqrt{5} =$$

$$\sqrt{2} \cdot \sqrt{10} =$$

$$\sqrt{2} \cdot \sqrt{2} =$$

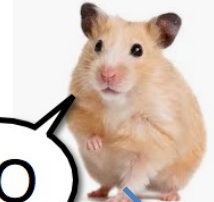
$$\sqrt{\frac{a}{b}} = \frac{\sqrt{a}}{\sqrt{b}}$$

$$\sqrt{\frac{4}{9}} =$$

$$\sqrt{\frac{5}{9}} =$$

$$\sqrt{\frac{4}{5}} =$$

NO

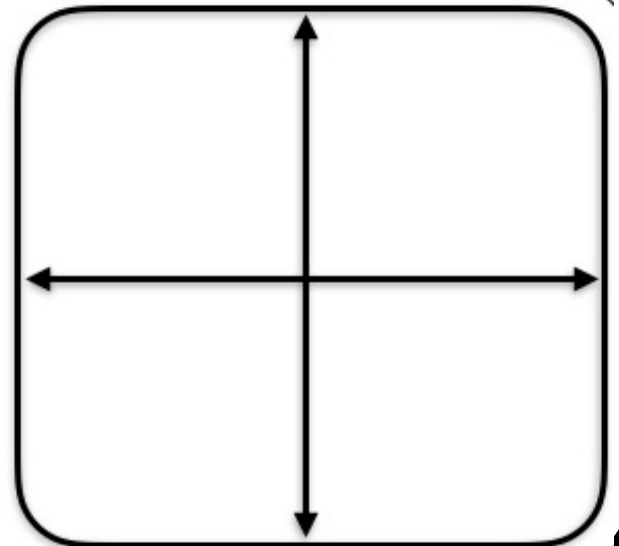


$$\sqrt{a} + \sqrt{b} \neq \sqrt{a+b} \quad \sqrt{a} - \sqrt{b} \neq \sqrt{a-b}$$

Are $\sqrt{9+16}$ and $\sqrt{9} + \sqrt{16}$ equal?

Find a possible polynomial with all integer coefficients and the zeros of -3, 2 and 0.

Sketch the graph afterwards.
afterwards. Confirm using
Desmos

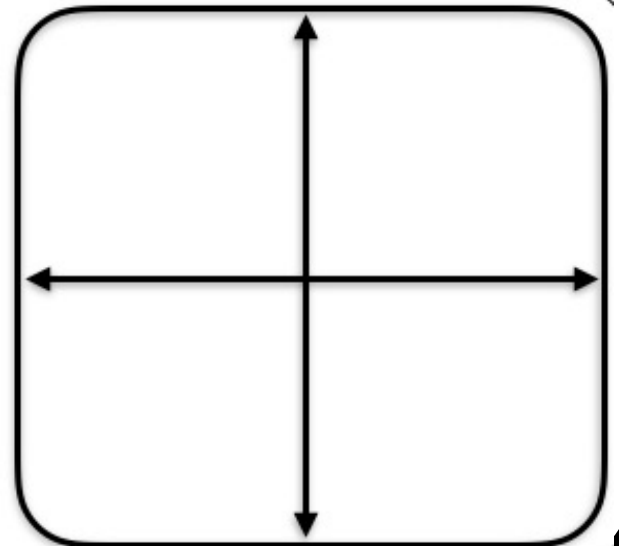


Find a possible polynomial with all integer coefficients with the zeros of $\sqrt{7}$ and 1.

Irrational Conjugate Rule:

If \sqrt{b} is a zero of a polynomial with all integer coefficients, then $-\sqrt{b}$ is a zero also. (and vice versa)

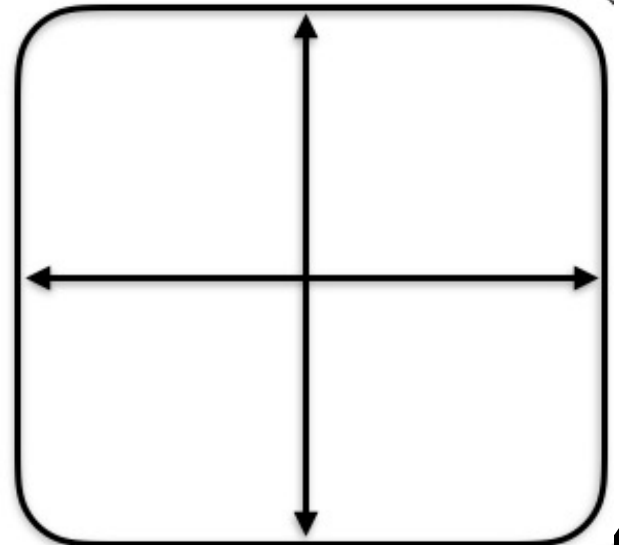
Sketch the graph afterwards.
afterwards. Confirm using
Desmos



Find a possible polynomial with all integer coefficients with the zeros of $2-\sqrt{15}$ and 0.

Irrational Conjugate Rule:
If $a+\sqrt{b}$ is a zero of a polynomial with all integer coefficients, then $a-\sqrt{b}$ is a zero also. (and vice versa)

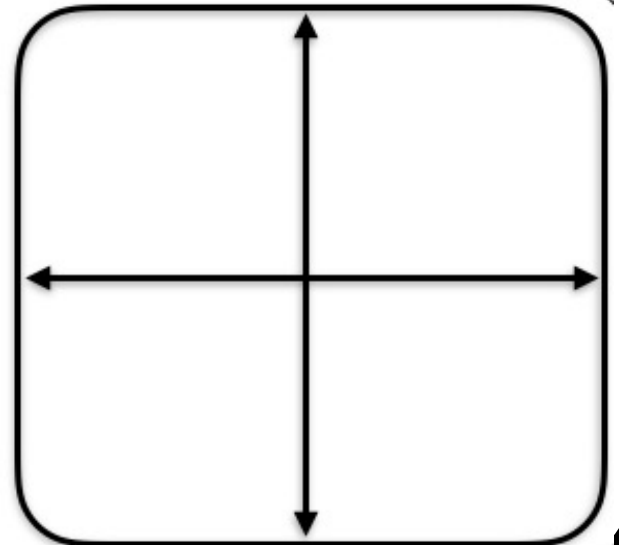
Sketch the graph afterwards.
Confirm using Desmos



Find a possible polynomial with all integer coefficients with the zeros of $-3i$ and -4 .

Complex Conjugate Rule:
If bi is a zero of a polynomial with all integer coefficients, then $-bi$ is a zero also. (and vice versa)

Sketch the graph afterwards.
Use Desmos FIRST this time.



THE END



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