

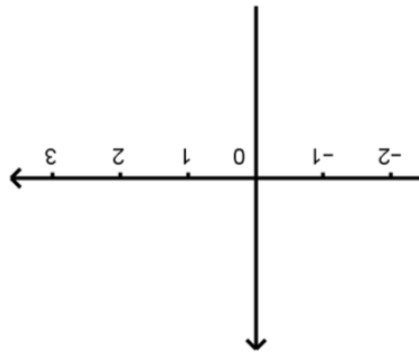
Step 3: Write in standard form

Step 2: Write in factored form

Step 1: List the zeros with multiplicity

Write a polynomial of least degree that has a leading coefficient of 1, and zeros of -2, 5 and $\pm i$.

Example 3 Write the equation of the polynomial in standard form given real & imag. zeros



Step 3: Write in standard form

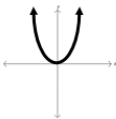
Step 2: Write in factored form

Step 1: List the zeros with multiplicity

Write a polynomial of least degree that has a leading coefficient of 1, and zeros of 0 and 2, where 2 is a double zero.

Example 2 Write the equation of the polynomial in standard form given real zeros

Bounce:



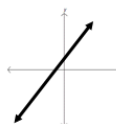
Factor has an _____ exponent.
The exponent is the multiplicity of that factor.

Wiggle:



Factor has an _____ exponent greater than ____.
The exponent is the multiplicity of that factor.

Cross:



Factor has an exponent of ____.
This is a linear factor; the exponent is implied but not written.

Writing Polynomial Equations

Fundamental Theorem of Algebra:

All polynomials have the same number of complex (real or imaginary) zeros as the degree.

Complex Conjugates: Imaginary or irrational zeros that always come in pairs such as $2i$ and $-2i$ or $5\sqrt{3}$ and $-5\sqrt{3}$.

Multiplicity: The number of times a factor of a polynomial is repeated; represented by an exponent >1 on the factor.

Example 1 Write the equation in factored form given a graph

Write a polynomial equation of least degree in factored form.

End Behavior:

$$x \rightarrow -\infty, y \rightarrow$$

$$x \rightarrow \infty, y \rightarrow$$

Sign of LC:

Zeros:

$x =$ _____ with multiplicity

$x =$ _____ with multiplicity

$x =$ _____

Equation:

