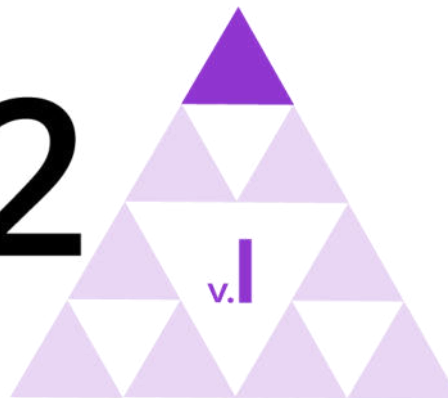


IM 9–12 MATH



Unit 2

Polynomials and Rational Functions

ALGEBRA 2

Lesson 7

Using Factors and Zeros

Learning Goal

Let's write some
polynomials.

Algebra 2

More Than Factors

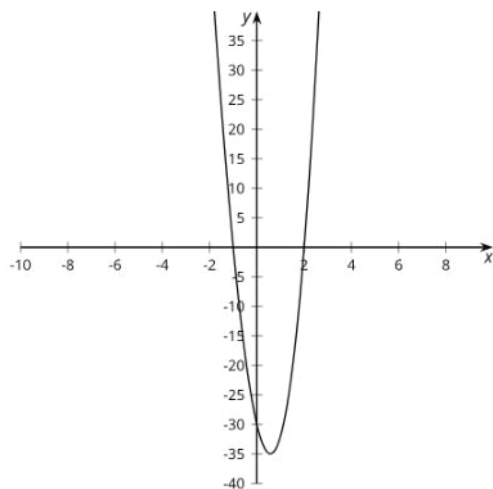


Warm-up

M and K are both polynomial functions of x where $M(x) = (x+3)(2x-5)$ and $K(x) = 3(x+3)(2x-5)$.

1. How are the two functions alike? How are they different?
2. If a graphing window of $-5 \leq x \leq 5$ and $-20 \leq y \leq 20$ shows all intercepts of a graph of $y = M(x)$, what graphing window would show all intercepts of $y = K(x)$?

Choosing Windows



She says, “This graph looks like a parabola, so it must be a quadratic.”

Mai graphs the function p given by $p(x) = (x + 1)(x - 2)(x + 15)$ and sees this graph.

1. Is Mai correct? Use graphing technology to check.
2. Explain how you could select a viewing window before graphing an expression like $p(x)$ that would show the main features of a graph.
3. Using your explanation, what viewing window would you choose for graphing $f(x) = (x + 1)(x - 1)(x - 2)(x - 28)$?

What's the Equation?



Write a possible equation for a polynomial whose graph has the following horizontal intercepts. Check your equation using graphing technology.

1. $(4, 0)$
2. $(0, 0)$ and $(4, 0)$
3. $(-2, 0)$, $(0, 0)$ and $(4, 0)$
4. $(-4, 0)$, $(0, 0)$, and $(2, 0)$
5. $(-5, 0)$, $\left(\frac{1}{2}, 0\right)$, and $(3, 0)$



What have you learned so far about the relationship between the features of graphs and equations of polynomial functions?

I can write an expression for a function that has specific horizontal intercepts.

Learning Targets

Algebra 2

A Possible Polynomial Equation



Cool-down

Write an equation for a polynomial function whose graph intercepts the horizontal axis at -7 , 8 , and 15 .



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