Unit 2 Lesson 7: Using Factors and Zeros

1 More Than Factors (Warm up)

Student Task Statement

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 $y = K(x)$?

2 Choosing Windows

Student Task Statement

Mai graphs the function p given by $p(x) = (x + 1)(x - 2)(x + 15)$ and sees this graph.
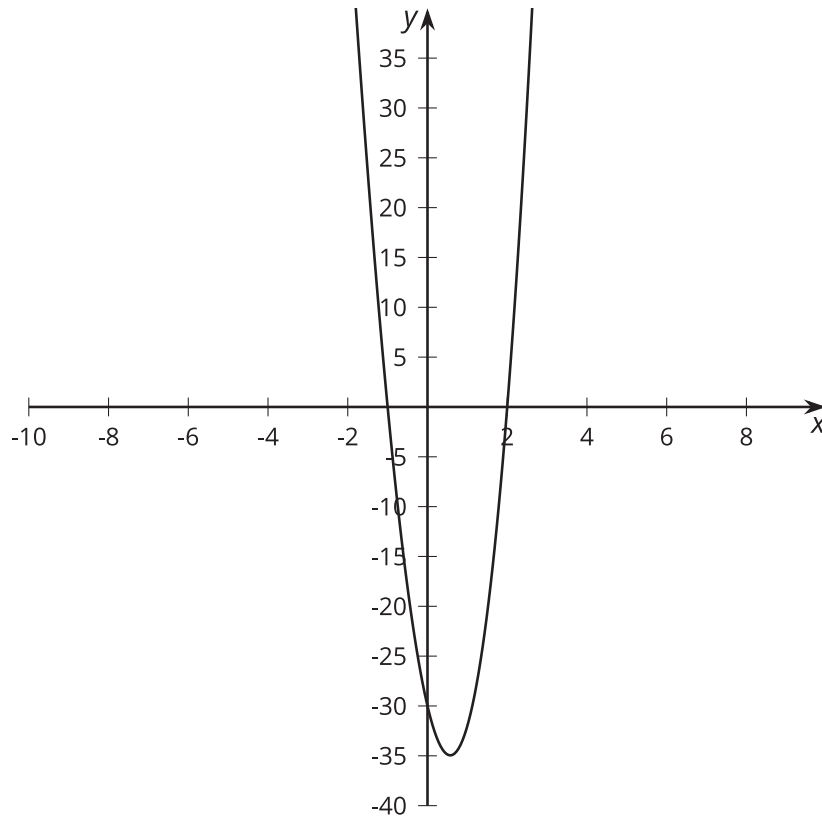
She says, "This graph looks like a parabola, so it must be a quadratic."

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 $f(x) = (x + 1)(x - 1)(x - 2)(x - 28)$?

3 What's the Equation?

Student Task Statement

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. $(\text{-}2, 0)$, $(0, 0)$ and $(4, 0)$

4. $(\text{-}4, 0)$, $(0, 0)$, and $(2, 0)$

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