

Names: _____

Activity #8: Quadratic-ish Equations

College Algebra

1. Find all solutions of the following equation.

$$x^3 - 15x^2 + 54x = 0$$

2. Find all solutions of the following equation.

$$2x^4 - 7x^2 + 3 = 0$$

3. Compute the following product.

$$(x - 1)(x + 1)(x + 2)$$

4. Compute the following product.

$$(x + 1)(x - 1)(2x - 2)$$

5. Fill in the boxes to describe the long-term behavior of the following polynomial.

$$p(x) = 3x^3 - 2x + 1$$

.

As $x \rightarrow \infty$, $p(x) \rightarrow$, and as $x \rightarrow -\infty$, $p(x) \rightarrow$

6. Fill in the boxes to describe the long-term behavior of the following polynomial.

$$p(x) = -3x^3 + 5x^2 + 1$$

.

As $x \rightarrow \infty$, $p(x) \rightarrow$, and as $x \rightarrow -\infty$, $p(x) \rightarrow$

7. Use synthetic division to find the quotient and remainder when

$$a(x) = x^5 - x^4 - 5x^3 + 5x^2 + 4x - 4$$

is divided by $b(x) = x - 2$.