BECA / Dr. Huson / Regents Prep: Graphs   First and last name:
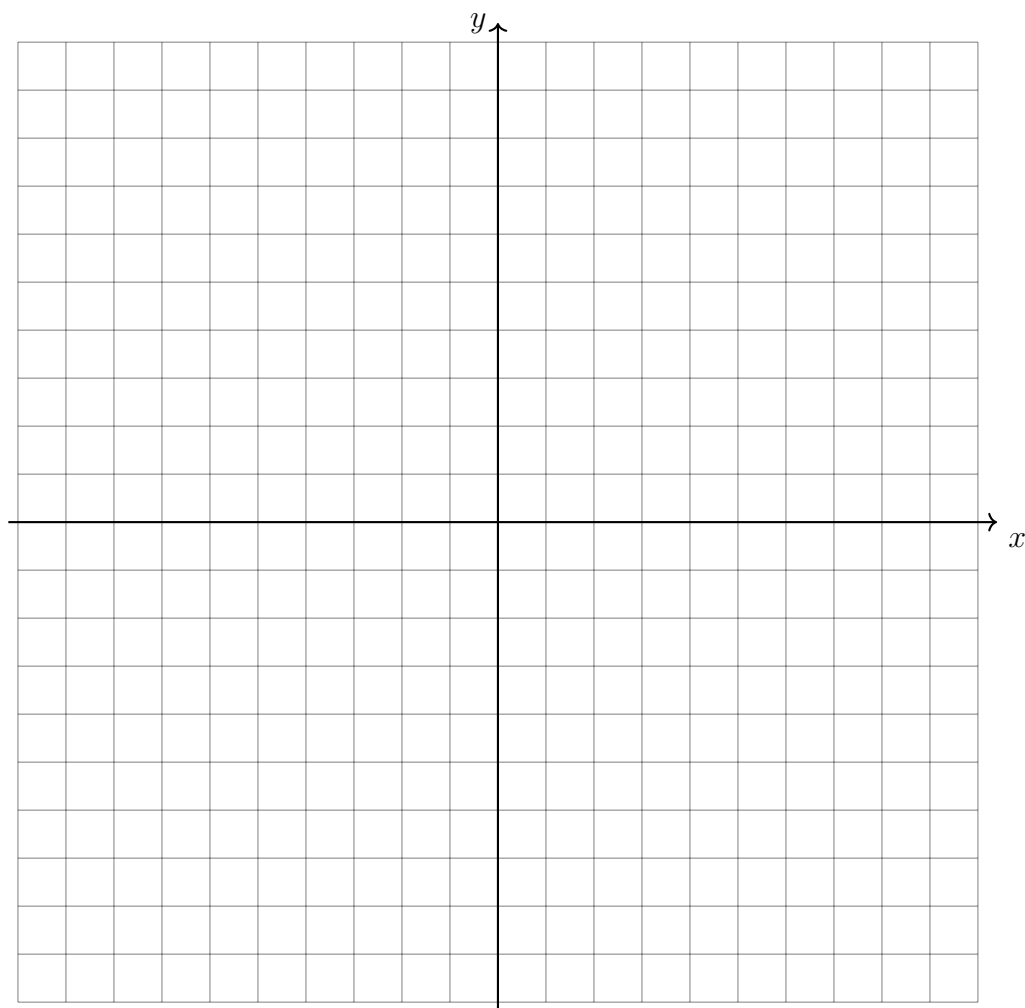27 November 2024   Section:

3.10 Do Now: Graphing 4th degree polynomials

1. On the grid below, graph the function $f(x) = x^3 - 6x^2 + 9x + 6$ on the domain $-1 \le x \le 4$.

   (a) Mark and label the x-intercepts.

   (b) Write the function in factored form.

   (c) Characterize the end behavior of the function. Use the notation "as $x \to \pm\infty$ $y \to \pm\infty$"

   (d) Mark and label the relative minimum point as an ordered pair.

2. Circle the equations that are an identities.

   (a) $x^2 - y^2 = (x - y)(x + y)$

   (b) $(x + y)^2 = x^2 + 2xy + y^2$

   (c) $x^3 - y^3 = (x - y)(x^2 - xy + y^2)$

   (d) $x^3 + y^3 = (x + y)(x^2 - xy + y^2)$

3. Write a recursive definition of the sequence $a_1 = 10$, $a_2 = 1$, $a_3 = 0.1$, $a_4 = 0.01, \ldots$
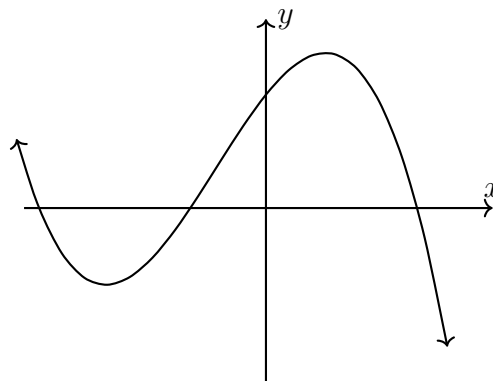
4. Write down the solutions to the equation $x(3x + 4)(x + 1)(x - 5) = 0$

5. Graphed is $y = f(x)$. Write the function in factored form.

   (a) Is the leading coefficient positive or negative?

   (b) What is its end behavior?

   (c) What is the degree of the polynomial?

6. If the diameter of a storm is 30 miles, how long might it last in hours? Use the formula $D^3 = 216T^2$ where D is the diameter in miles and T is the duration in hours.