Homework 9

Name:

P 1. Find at least two polynomial functions with zeros

$$x = -2, 0, 2, \sqrt{5}, i,$$

and such that the coefficients of the polynomial are integers. Sketch the two polynomials on the same coordinate axes. Identify the end-behavior, intercepts, and include a table of "nice" values for which to evaluate the function and the corresponding function values.

P 2. Graph
$$f(x) = x^3 - 4x^2 - 25x + 100.$$

Find all real zeros and their multiplicities. Find the y-intercept, if any. Label the intercepts on your graph. Determine the end-behavior. Include a table of "nice" values for which to evaluate f and the corresponding values of f.

P 3. Write an equation for the parabola in standard form
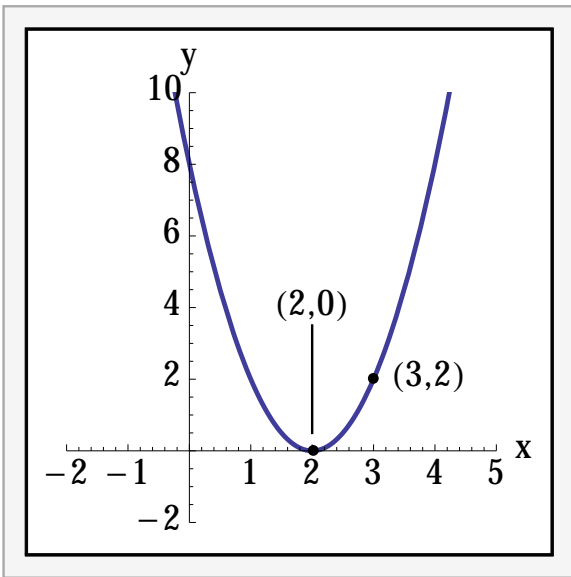
P 4. Graph the following functions

$$f(x) = 3e^{x+1} - 4$$

and the following 4 polynomials:

$$T_1(x) = 3ex + 3e - 4$$
$$T_2(x) = \frac{3ex^2}{2} + 3ex + 3e - 4$$
$$T_3(x) = \frac{ex^3}{2} + \frac{3ex^2}{2} + 3ex + 3e - 4$$
$$T_4(x) = \frac{ex^4}{8} + \frac{ex^3}{2} + \frac{3ex^2}{2} + 3ex + 3e - 4$$

Then evaluate f, T_1, T_2, T_3, and T_4 at $x = 2$. What do you notice? Does the graph support your conclusion?