MAT 121-G81 Take-Home-Extra Spring, 2012

Test 3, Chapter 3 Name_____

Due May 1st.

1. Let $f(x) = x^5 - 5x^4 + 7x^3 - 11x^2 + 12x + 36$

   a. Find all real zeros of f. List these, and circle them. Factor f over the real numbers. Circle this factorization.

   b. Find the remaining (2) nonreal zeros of f. List them and circle them. Factor f over the complex numbers.

c. Sketch the graph of f. Label *x*- and *y*-intercepts. Don't make your graph too tall or too steep. A smooth polynomial graph is the goal, here, not a slavish obedience to the numbers that loses the essence of its shape.

2. Give a (quick) rough sketch of the following:

a. $f(x) = 2(x + 4)^2$

b. $f(x) = \dfrac{1}{(x+4)^3}$