MAT 121 Fall, 2012
150 Points
Test 3 in-class, Chapter 3 Name_____

Read and follow instructions.

1. (10 pts) Form a polynomial in factored form with *real* coefficients with the given zeros and degree. Do *not* expand the polynomial.

Zeros: -2, multiplicity 1; 5, multiplicity 2; $7 + 2i$, multiplicity 1, Degree 5.

2. (10 pts) Expand $(x-3+2i)(x-3-2i)$

3. (10 pts) Use long division to find the equation of the oblique asymptote for the rational function $f(x)=\dfrac{5x^3+3x^2-4}{x^2-3}$.

4. Solve the inequalities:

   a. (5 pts) $4(x-1)^2(x-2)(x-4)^3 \geq 0$

   b. (5 pts) $\dfrac{4(x-1)^2}{(x-2)(x-4)^3} \geq 0$

5. (10 pts) Given $f(x) = x^4 - 4x^3 + 4x^2 + 4x - 5$ has rational zeros $x = \pm 1$, find *all* zeros of f and split f into linear factor, that is, factor f over the complex numbers.