Math 105, Precalculus
Additional problems from Section 3.2

For practice: in each problem below you are given a polynomial and one or more zeros. In each problem do the following:

a. Show that the given value(s) of *c* are zeros of $P(x)$, either by substitution, long division, or synthetic division.
b. Use long division or synthetic division to simplify the polynomial.
c. Find all real zeros of the polynomial. To check yourself, the real zeros are given in the back of the book under section 3.3 (problems 17, 23, 41, 43, 51, 53.)
d. Sketch the polynomial (problems 51 and 53 are in the back of the book.)

1. $P(x) = x^3 - 4x^2 + x + 6,\ c = -1.$

2. $P(x) = x^4 + 6x^3 + 7x^2 - 6x - 8,\ c = 1,\ c = -1.$

3. $P(x) = x^3 + 4x^2 + 3x - 2,\ c = -2.$

4. $P(x) = x^4 - 6x^3 + 4x^2 + 15x + 4,\ c = -1,\ c = 4.$

5. $P(x) = x^3 - 3x^2 - 4x + 12,\ c = 2.$

6. $P(x) = 2x^3 - 7x^2 + 4x + 4,\ c = -\frac{1}{2}.$

To turn in by 4:00 pm, Thursday, November 12, 2009:

1. Section 3.2, problems 6 and 18.
2. In each problem below do the following:
   a) Show that the given value(s) of *c* are zeros of $P(x)$, either by substitution, long division, or synthetic division.
   b) Use long division or synthetic division to simplify the polynomial.
   c) Find all real zeros of the polynomial.
      i) $P(x) = 6x^4 - 7x^3 - 12x^2 + 3x + 2,\ c = -1,\ c = 2.$
      ii) $P(x) = x^4 - x^3 - 5x^2 + 3x + 6,\ c = -1,\ c = 2.$

3. In each problem below do the following:
   a) Show that the given value(s) of *c* are zeros of $P(x)$, either by substitution, long division, or synthetic division.
   b) Use long division or synthetic division to simplify the polynomial.
   c) Find all real zeros of the polynomial.
   d) Sketch the polynomial.
      i) $P(x) = x^3 - x^2 - 8x + 12,\ c = 2.$
      ii) $P(x) = x^3 - 7x^2 + 14x - 8,\ c = 1.$