Name:_____

Test 2
Fall 2008
MATH 111 Section 01
February 29, 2007

Directions : You have 50 minutes to complete all 5 problems on this exam. There are a possible 100 points to be earned. You may not use your book, notes, or any graphing/programmable calculator. Please be sure to show all pertinent work. *An incorrect answer with no work will receive no credit!* If any portion of the exam is unclear please come to me and I will elaborate provided I can do so without giving away the problem.

1. (20 points)
   Find the quotient and remainder if $f(x) = 2x^4 - x^3 - 3x^2 + 7x - 12$ is divided by $p(x) = x^2 - 3$.

2. (20 points)
Let $f(x) = x^4 - 6x^2 + 4x - 8$. ***Use the remainder theorem*** to find $f(-3)$.

3. (20 points)
Show that the equation $2x^5 - 3x^3 + 4x^2 + x - 2 = 0$ has no rational root.

4. (20 points)
   Find all roots of the equation $x^4 + 3x^3 - 30x^2 - 6x + 56 = 0$ and state their multiplicity.

5. (20 points)
Find a fourth degree polynomial with roots $2, 3, -2,$ and 1 so that $f(4) = 72$.