Name:

Test 1 Fall 2008 MATH 111 Section 01 February 1, 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)

Solve the inequality, and express the solutions in terms of intervals whenever possible.

$$\frac{x^2 - x}{x^2 + 2x} \le 0.$$

- 2. (20 points) Find the distance between (7, -3) and (3, -3) as well as the midpoint.
- 3. (20 points) Find the center and radius of the circle given by the equation

$$x^2 + y^2 - 4x + 6y - 36 = 0.$$

4. (20 points)

Find the equation of the line passing through the point (7, -3) that is perpendicular to the line 2x - 5y = 8.

5. (20 points)

If $f(x) = -x^2 + 4$ and if a and h are real numbers, find

- (a) f(a)
- (b) f(-a)
- (c) -f(a)
- (d) f(a+h)
- (e) f(a) + f(h)
- (f) $\frac{f(a+h)-f(a)}{h}$, if $h \neq 0$.