Math 1151, Lecture 010, Evaluative Exercise 4
April 1, 2010

Name: _____

Discussion Section: _____

Discussion TA: _____

Seating Section: Left Front Right Front
Left Back Right Back

You have twenty-five minutes to complete the following six problems, without using your notes or your book. You may use a scientific a calculator.

1. For the parabola with focus at $(0, -1)$ and directrix $y = 1$,

   (a) Find the equation of the paraboloa.

   (b) Graph the parabola. (Make sure to include the three key points.)

2. For $P(x) = x^3 - 6x^2 + 13x - 10$

   (a) List all the possible rational roots of $P(x)$.

   (b) Factor $P(x)$ over the real numbers.

   (c) Factor $P(x)$ over the complex numbers.

3. For the parabola given by the equation $y^2 + 6y - 4x + 1 = 0$,

   (a) Find the vertex, focus, and directrix.

   (b) Graph the parabola (with three key points.)

4. **Challenge:** Factor $P(x) = 2x^4 - x^3 - 5x^2 + 2x + 2$ over the real numbers.