Math 220 **Quiz 7 (take-home)** **Spring 2010**

Name _____

- You may work with other students in this class. However each student should write up solutions separately and independently – nobody should copy someone else's work.
- You may use your notes and the textbook.
- You should not use a calculator except to do basic arithmetic.
- Show sufficient work to justify each answer.
- There is no specific time limit, but the quiz is due at the beginning of Tuesday's discussion section (Monday for Merit sections).
- Note to TA's – you should not help students with these specific problems or go over solutions until the last discussion section has turned in the quiz at 3pm Tuesday.

1. (2 points) Find a formula for the derivative $\dfrac{dy}{dx}$ given that $x^2 + 4xy + y^2 = 13$. It is acceptable to leave your answer in terms of both x and y.

2. (2 points) Determine a formula for the line which is tangent to the graph of $y = \tan^{-1}\left(e^{6x}\right)$ at its y-intercept.

3. (2 points) Find a formula for $f'(x)$ given that $f(x) = \ln\left(x^5 e^{x^3}\left(x^4+3\right)^6\right)$.

4. (4 points) Suppose that t seconds after an object is shot directly upwards from the surface of some planet its height in feet is given by $h = 200t - 2.5t^2$.

   (a) Find a formula for the velocity of the bullet at time t.

   (b) What is the maximum height attained by the bullet?