Name______________________________ **Student Id:**______________________________

Math 120, Section A **Quiz 3** **16 October 1997**

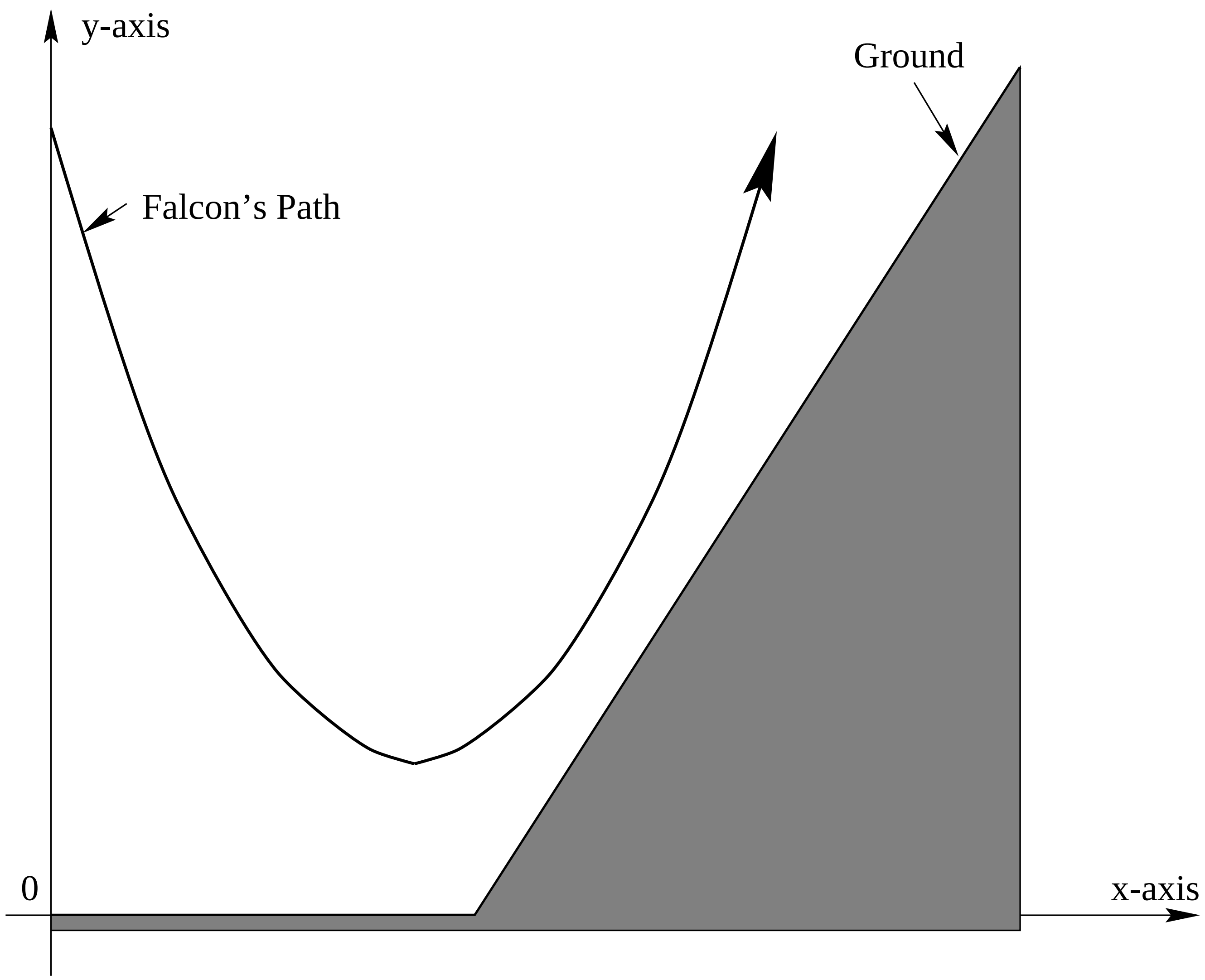
Instructions: You have 30 minutes for this quiz. Show all of your work.

Problem Description: A falcon is swooping down from the sky looking for prey. The falcon starts it's dive at the y intercept. It's **path** is perfectly described by the quadratic equation:

$$P(x) = \frac{37}{900}x^2 - \frac{37}{3}x + 1000.$$

And, the surface of the **ground** is given by the multipart function:

$$G(x) = \begin{cases} 0 & 0 \leq x \leq 200 \\ 8x - 1600 & 200 \leq x \leq 300 \end{cases}$$



Note: This picture is not properly scaled.

Answer the questions on pages 2 and 3. Please show all your work.

1. (3 points) What is the vertical height above the ground when the falcon starts diving?

2. (6 points) What is the falcon's coordinate position when it reaches the vertex of it's path?

3. (3 points) What is the falcon's vertical height above the ground when it is at the vertex of it's path?

4. (8 points) Write an equation modeling the falcon's vertical height above the ground as a multipart function, $H(x)$. Reminder: Don't forget to include the domain for each part of the function.

5. (10 points) What is the falcon's **minimum** vertical height above the ground when $200 \leq x \leq 300$?