NAME:

Show ALL your work CAREFULLY.

(a) Consider the initial value problem

$$\frac{dy}{dx} = x + y^2 \quad \text{with } y(0) = 1.$$ 

Estimate the value $y(2)$ (when $x = 2$) of the solution using Euler’s method with two steps with initial point $(0,1)$. DO THIS BY HAND and show all your steps.

(b) Find the exact area of the region in the first quadrant bounded by the curve $x = 1 - y^2$, the curve $x = 3y^2$, and the line $y = 0$. 

\text{Date: January 30, 2009.}