

Math 148 Quiz #2
July 6, 2010

Name: _____

Show all work and answers on a separate sheet with a box around your final answer. Calculators are allowed.

1. The number of ducks in a park on day t is given by the function $D = f(t)$.

(a) (1 pt.) What are the units of $f'(t)$?

(b) (4 pts.) Suppose $f(25) = 70$ and $f'(25) = -3$. Interpret these statements in terms of the number of ducks in the park.

(c) (3 pts.) Given the statements in part (b), estimate the number of ducks in the park on day 27 using linear approximation.

2. Find derivatives of the following functions.

(a) (3 pts.) $g(x) = -4x^8 + \frac{2}{3}x - \sqrt[4]{5}$

(b) (3 pts.) $h(t) = \frac{8t^2}{t^3} + \frac{1}{\sqrt{t}}$

3. (6 pts.) Write an equation of the line tangent to $f(x) = \frac{1}{3}x^3 + x + 4$ at $x = 3$.