

NAME: _____

MATH 12002

HOMEWORK #3 (16 pts)

SPRING 2009

SHOW ALL WORK FOR FULL CREDIT — PLEASE CIRCLE YOUR FINAL ANSWER

DUE: TUESDAY, FEBRUARY 17, 2009 AT THE BEGINNING OF CLASS

1. (1.5 pts each) Find the derivative of each function. (You do not need to simplify.)

(a) $f(x) = \frac{4}{x^2} - \frac{3}{2\sqrt{x}} + 5\sqrt[4]{x^3} - \frac{7}{3x^2}$

(b) $g(x) = \frac{4x^3 + 2x}{7x^4 - 3x^2 + 1}$

(c) $h(x) = \frac{7}{\sqrt[5]{3x^2 - 7x + 2}}$

(d) $f(x) = (7x - 3x^2) \cos x$

(e) $g(x) = \frac{\sec x \sin x}{1 + \tan x}$

HW Score: Course Grade:

16

168 =

(f) $h(x) = (4x^2 - 3x + 9)^2 (5x - 3)^4$

2. (2 pts) Find the equation of the line tangent to the graph of $f(x) = \frac{6}{1-x^2}$ at the point $(2, -2)$.

3. A particle moves according to the distance function

$$s(t) = 2t^3 - 17t^2 + 40t + 19$$

- (a) (1 pt) Find the velocity at time t .
- (b) (1 pt) Find the acceleration at time t .
- (c) (2 pts) When is the particle moving in a positive direction?
- (d) (1 pt) (SET UP ONLY) Find the total distance travelled in the first 14 seconds.