

Math 16A (Summer 2008)

Kouba

Quiz 6

PRINT Name : .....

Exam ID # : .....

1.) (10 pts. each) Assume that  $y$  is a function of  $x$ . Find  $y' = \frac{dy}{dx}$ .

a.)  $x^2y^3 + 5x = y$

b.)  $\sin(xy) = \tan x + y^4$

2.) Assume that  $xy + y^2 = x^2 + 4$  .

a.) (6 pts.) Find the slope of the graph of this equation at the point  $x = 0, y = 2$  .

b.) (6 pts.) Determine if the graph of this equation is concave up or concave down at the point  $x = 0, y = 2$  .

c.) (3 pts.) Sketch a graph of this equation near the point  $x = 0, y = 2$  .

3.) (10 pts. each) Consider the given right triangle. If  $x$  is increasing at the rate of 2 ft./min. and  $y$  is decreasing at the rate of 1 ft./min., then find the following related rates when  $x = 4$  ft. and  $y = 3$  ft.

a.) The rate at which its AREA is changing

b.) The rate at which its HYPOTENUSE is changing