

## Quiz 3

Spring 2013

Your name: \_\_\_\_\_

Math 0220

Your TA's name: \_\_\_\_\_

No calculators, no notes, no books. Show all your work (no work = no credit). Write neatly. Simplify your answers.

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1. [5 points] Use implicit differentiation to find an equation of the tangent line to the curve  $x^{2/3} + y^{2/3} = 5$  at the point  $(8, 1)$ .

2. A particle moves according to a law of motion  $s(t) = t^3 + 3t^2 - 24t$ ,  $t \geq 0$ , where  $t$  is measured in seconds and  $s$  in feet.

(a) (2 points) What is its velocity after 3 seconds?

(b) (1 points) When is the particle at rest?

(c) (2 points) Find the total distance traveled during the first 4 seconds.

bonus problem [5 points extra] Use the definition of the derivative to compute the derivative of the function  $g(x) = f(3x)$  at a number  $a$ , where  $f$  is a differentiable function. Write the answer in terms of the derivative of  $f$ .