

# Math 124 Quiz 5 Winter 2002

Name:

**Problem 1.** (10 points) (based on HW problem #49 in 3.7)

Suppose the velocity of a particle at time  $t$  is given by  $v(t) = 3t^2 - 24t + 36$  meters/sec.

(i) Find the acceleration  $a(t)$  at time  $t$ . (Remember units).

(ii) Graph  $v(t)$  and  $a(t)$  (roughly) in the interval  $[0, 8]$ . Label your graph and mark all points you consider important for drawing these graphs.

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(iii) In which time periods between  $t = 0$  and  $t = 8$  is the particle slowing down? Why?

(iv) If  $s(t)$  measures the displacement or position of the particle at time  $t$ , when is  $s(t)$  decreasing in the interval  $[0, 8]$ ? Why?

Problem 2. (5 points) (# 38 in Section 3.6) Find the equation of the tangent line to the curve  $\sqrt{x} + \sqrt{y} = \sqrt{c}$  at a point  $(x_0, y_0)$  on the curve. (Here  $c$  is some constant.)