

Name:

SOLUTIONS

Quiz #7 - October 13, 2006

1. Find the equation of the tangent line to the graph of

$$2(x^2 + y^2)^2 = 25(x^2 - y^2)$$

at the point (3, 1).

$$4(x^2 + y^2)(2x + 2yy') = 50x - 50yy'$$

$$4 \cdot 10(6 + 2y') = 150 - 50y'$$

$$240 + 80y' = 150 - 50y'$$

$$130y' = -90$$

$$y' = -9/13$$

$$y - 1 = -9/13(x - 3)$$

2. Find $\frac{dx}{dt}$.

$$\sqrt{\cos(x) + x^2} = t + 1.$$

$$\frac{1}{2\sqrt{\cos x}}(-\sin x) \frac{dx}{dt} + 2x \frac{dx}{dt} = 1$$

$$\frac{dx}{dt} = \frac{1}{2x - \frac{\sin x}{2\sqrt{\cos x}}}$$