

Name: SOLUTIONS

Quiz #6 - October 6, 2006

1. Find the equation of the tangent line to the graph of $y = f(x)$ when $x = 1$.

$$y = (x^3 + 2x + 1)(6x^2 - 2x - 3)$$

point (1, 4)

$$y' = (x^3 + 2x + 1)(12x - 2) + (3x^2 + 2)(6x^2 - 2x - 3)$$

$$y'(1) = 4 \cdot 10 + 5 \cdot 1 = 45$$

$$y - 4 = 45(x - 1)$$

2. Find $\frac{dy}{dx}$:

a. $y = \frac{2x^2 + 3}{\sin(x)}$

$$\frac{(\sin x)(4x) - (2x^2 + 3)\cos x}{\sin^2 x}$$

b. $y = \cos(\sqrt{x})$

$$-\sin(\sqrt{x}) \cdot \frac{1}{2\sqrt{x}}$$

c. $y = (3x + \sin(x))^{30}$

$$30(3x + \sin x)^{29} (3 + \cos x)$$