

Quiz 5 Calculus 1 9/30/2002

Each problem is worth 5 points. Show complete justification for full credit.

1. Differentiate $y = \frac{\sin x}{x^2}$.

$$y' = \frac{f'(x)g(x) - f(x)g'(x)}{g(x)^2}$$

$$y' = \frac{(\cos x)(x^2) - (\sin x)(2x)}{x^4}$$

$$y' = \frac{x^2 \cos x - 2x \sin x}{x^3}$$

Great

$$y' = \frac{x \cos x - 2 \sin x}{x^3}$$

2. Find an equation of the line tangent to the curve $y = 3x + \cos x$ at the point $(0, 1)$.

5 $y = 3x + \cos x$

$$y' = 3 - \sin x$$

$$y' \text{ at } (0, 1) = \text{slope} = 3 - \sin 0 = \underline{3}$$

Equation of line tangent to $y = 3x + \cos x$ with slope 3 and passing through $(0, 1)$ is.

$$(y-1) = 3(x-0)$$

$$\underline{3x - y + 1 = 0}$$

Excellent