

STUDENT NAME:

Calculus 1550, section 6. Tuesday, March 9, 2004. Eleventh quiz.

Find the derivatives of the following functions. 2 points each.

1. $f(x) = 3 - x - \tan(x) - \tan(3)$

$$\begin{aligned} f'(x) &= 0 - 1 - \sec^2(x) - 0 \\ &= -1 - \sec^2(x) \end{aligned}$$

2. $f(x) = (\sin(x))^2 = \sin(x)\sin(x)$

using product rule: $f'(x) = \sin(x)\cos(x) + \cos(x)\sin(x) = 2\cos(x)\sin(x)$

using chain rule: $f'(x) = 2(\sin(x))^{2-1} \times (\sin(x))' = 2\sin(x)\cos(x)$

product rule: 3. $f(x) = x^2 \cos(x)$

$$f'(x) = -x^2 \sin(x) + 2x \cos(x)$$

quotient rule:

4. $f(x) = \frac{6x}{\sin(x)}$ $f'(x) = \frac{\sin(x) \times 6 - 6x \times \cos(x)}{\sin^2(x)}$

$$= \frac{6(\sin(x) - x \cos(x))}{\sin^2(x)}$$

product rule:

5. $f(x) = \sin(x)\cos(x)$

$$f'(x) = \cos(x)\cos(x) + -\sin(x)\sin(x)$$

$$= \cos^2(x) - \sin^2(x)$$