Quiz 3

1. Compute the derivative of each of the following functions:

(a) $x^4 + \sqrt{x}$

(b) $x^2 \cos(x)$

(c) $\frac{x^2}{\sin x}$

2. Let d be a real number and let

$$f(x) = \begin{cases} \sin(x) & \text{if } x \le 0 \\ dx & \text{if } x > 0 \end{cases}$$

For which d is $f(x)$ differentiable at 0?

3. Compute $\lim\limits_{x \to 0} \dfrac{\sin(3x)}{7}$.