

Name: Key

Quiz Score: \_\_\_\_\_ /10

Find the derivative of the the following functions. Do not simplify your answers. (2 points each)

1.  $f(x) = 5x^8 + 3x^4 - 2x^2 + 4$

$$f'(x) = 40x^7 + 12x^3 - 4x$$

2.  $f(x) = 5x^{\frac{1}{5}} + 3x^{0.2} + \frac{1}{3}$

$$f'(x) = x^{-\frac{4}{5}} + 0.6x^{-0.8}$$

3.  $f(x) = 2\sqrt{x} + \frac{1}{2\sqrt{x^2}} = 2x^{\frac{1}{2}} + \frac{1}{2}x^{-\frac{2}{2}}$

$$f'(x) = x^{-\frac{1}{2}} - \frac{2}{10}x^{-\frac{7}{5}} = x^{-\frac{1}{2}} - \frac{1}{5}x^{-\frac{7}{5}}$$

4.  $f(x) = 3\cos(x) - 5\sin(x)$

$$f'(x) = -3\sin(x) - 5\cos(x)$$

5.  $f(x) = x^2 \cos(x)$

$$\begin{aligned} f'(x) &= 2x \cos(x) + x^2(-\sin(x)) \\ &= 2x \cos(x) - x^2 \sin(x) \end{aligned}$$