

## Quiz 5

Name:

Section:

1. Find  $f'(x)$  if  $f(x) = \frac{7x^{-2}-8x^3+10}{6x-4x^3+8x^5}$ , do not simplify.

$$\frac{(6x - 4x^3 + 8x^5)(-14x^{-3} - 24x^2) - (7x^{-2} - 8x^3 + 10)(6 - 12x^2 + 40x^4)}{(6x - 4x^3 + 8x^5)^2}$$

2. Find  $f'(x)$  if  $f(x) = (2x^5 - 6x^3 - 10^8)(6x^{-3/4} + 9x^{-3})$ , do not simplify.

$$(10x^4 - 18x^2)(6x^{-3/4} + 9x^{-3}) + (2x^5 - 6x^3 - 10^8)\left(-\frac{18}{4}x^{-7/4} - 27x^{-4}\right)$$

3. Find  $f'(x)$  if  $f(x) = (x^5 - 8x^3 + x + 6)^{2/3}$ , do not simplify.

$$\frac{2}{3}(x^5 - 8x^3 + x + 6)(5x^4 - 24x^2 + 1)$$

4. Find the equation of the tangent line of  $f(x) = (4x^2 - 3)^2$  at  $x = 1$ .

$$f'(1) = 16 \quad (1, 1)$$

$$y - 1 = 16(x - 1) \quad \text{or} \quad y = 16x - 15$$

Quiz 6

Name:

Section:

1. A company has a cost function given by  $C(x) = 1000 - 25x - .1x^2$ . Find the average cost per item if 10 items are made.

$$\frac{C(10)}{10} = 74$$

2. A company has a cost function given by  $C(x) = 1000 - 25x - .1x^2$ . Approximate the cost of the 11<sup>th</sup> item.

$$C'(10) = -27$$

3. A company has a cost function given by  $C(x) = 1000 - 25x - .1x^2$ . Find the exact cost of the 11<sup>th</sup> item.

$$C(11) - C(10) = -27.1$$

4. If  $f(x) = x^4 - 4x^3 + 4$ , find the critical values of  $f$ , the intervals where the function is increasing/decreasing and the relative extrema. Show all your work. Just graphing the function is not enough.

Critical values

$$x=0, x=3$$

$$f'(x) = 4x^3 - 12x^2$$

$$= x^2(4x - 12)$$

f dec dec inc

f' - - +



local extrema

3 local minimum

$$f'(-1) = -16$$

$$f'(1) = -8$$

$$f'(4) = 64$$