

Prepa Tecnio 21)  
 Calculus I 2nd partial  
 Quiz # 2B

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I. Determine if true or false for each of the following statements (5 points each)

- F The derivative of  $y = \ln(x-5)^{\frac{3}{2}}$  is  $y' = \frac{3}{2(x-5)}$
- F The derivative of  $y = 4x - e^{-2x}$  is  $y' = 4 - 2e^{-2x}$
- F The derivative of  $y = \frac{7x^2 - 3x}{5x^3}$  is  $y' = \frac{14x - 3}{15x^2}$
- X If the velocity of the car is a function of time, then the derivative of this function with respect to time, describes the acceleration of the car.  
 velocity  
 acceleration

II. Circle the right answer. (10 points each)

1. The derivative for  $y = 3e^{2x}$  is:

- A)  $y' = 3e^{2x}$     B)  $y' = -\frac{6e^{2x}}{x^2}$     C)  $y' = 3e^2$     D)  $y' = 6x^2 e^{2x}$

2. The derivative for  $y = \ln\sqrt{3x-6}$  is:

- A)  $y' = \frac{1}{2} \ln(3x-6)^{-\frac{1}{2}}$     B)  $y' = \frac{1}{3x-6}$   
 C)  $y' = \frac{1}{2} \ln \frac{3}{\sqrt{3x-6}}$     D)  $y' = \frac{1}{2(x-2)}$

3. If the equation that gives the velocity of an object is  $v(t) = 2t^3 e^{6t}$ , then the equation that gives the acceleration is:

- A)  $a(t) = 6t^2 e^{6t}$     B)  $a(t) = 36t^2 e^{6t}$   
C)  $a(t) = 6t^2 e^{6t}(2t+1)$     D)  $a(t) = 12t^3 e^{6t}$

III. Answer the following questions.

1) Find the SLOPE of the line tangent to  $y = \frac{e^{3-2x}}{8}$  at  $x = \frac{3}{2}$  (20 points)

$y' = -\frac{2e^{3-2x}}{8}$   
 $y' = -\frac{2e^{3-2(\frac{3}{2})}}{8}$   
 $y' = -\frac{2e^0}{8}$   
 $y' = -\frac{2(1)}{8}$   
 $y' = -\frac{2}{8} = -\frac{1}{4}$

$u' = -2$   
 Slope =  $-\frac{1}{4}$

## Corrections Quiz 1 - 2nd Partial.

2) The following function is not differentiable at  $x=1$

d)  $f(x) = \sqrt[3]{x-1}$

a) Derivative  $f(x) = \frac{7}{2x^2} - 6x^8 + 3\sqrt[5]{x^4}$

$$f'(x) = \frac{7x^{-2}}{2} - 6x^8 + 3\sqrt[5]{x^4/5}$$

$$f'(x) = \frac{-7}{x^3} - 48x^7 + \frac{12}{5x^{1/5}} //$$

## Corrections Quiz 2 - 2nd partial.

1) Find slope of tangent line to  $y = \frac{e^{3-2x}}{8}$  at  $x = 3/2$ .

$$y' = \frac{-2e^{3-2x}}{8}$$

$$y' = \frac{-2e^{3-2(3/2)}}{8} = \frac{-2e^0}{8} = \frac{-2(1)}{8}$$

$$f'(3/2) = -1/4 //$$

2)  $f'(x)$  of  $f(x) = \frac{(3x-1)^4}{x}$   $u = 4(3x-1)^3$

$$f'(x) = \frac{(3x-1)^4}{x^2} - x[12(3x-1)^3]$$

$$v' = 1$$

$$f'(x) = \frac{(3x-1)^3[-9x-1]}{x^2} //$$

$$f'(x) = \frac{(3x-1)^3 [3x-1 - 12x]}{x^2}$$