

Prepa Tec  
Calculus I 2nd partial  
Quiz # 2A

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

1. T The derivative of  $y = 6 - e^{-x}$  is  $y' = e^{-x}$   $y = 6 - e^{-x} = -e^{-x} + 6$
2. F The derivative of  $y = \ln(x-4)^2$  is  $y' = \frac{2}{x-4}$
3. F The derivative of  $y = \frac{3x}{4x^2 - 5}$  is  $y' = \frac{3}{8x}$
4. T If  $s(t)$  is the function of position of an object in motion, then  $a(t) = s''(t)$  is equal to the function of the acceleration of the object.

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

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

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

2. (A) The derivative for  $y = \ln\sqrt{2x-4}$  is:

- A)  $y' = \frac{1}{2x-4}$     B)  $y' = \frac{1}{2} \ln(2x-4)^{1/2}$
- C)  $y' = \frac{1}{2} \ln \frac{2}{\sqrt{2x-4}}$     D)  $y' = \frac{1}{x-2}$

$y = \ln(2x-4)^{1/2}$      $y' = \frac{1}{2} \left( \frac{2}{2x-4} \right) = \frac{1}{2x-4}$   
 $y = \frac{1}{2} \ln 2x - 4$      $y' = \frac{1}{4x}$   
 $y = \frac{1}{2} \ln 2x - \ln 4$      $y' = \frac{1}{2x}$

3. (B) If the equation that gives the velocity of an object is  $v(t) = 2t^2e^{4t}$ , then the equation that gives the acceleration is:

- A)  $a(t) = 6t^2e^{4t}$     B)  $a(t) = 6t^2e^{4t}(2t+1)$
- C)  $a(t) = 36t^2e^{4t}$     D)  $a(t) = 12t^2e^{4t}$

$a(t) = (6t^2)'(e^{4t}) + (6t^2)(e^{4t})'$

III. Answer the following questions.

1) Find the SLOPE of the line tangent to  $y = \frac{e^{3-2x}}{4}$  at  $x = \frac{3}{2}$  (20 points)

$y' = \frac{(4)'(e^{3-2x}) - (e^{3-2x})(4)'}{4^2}$      $y - y_1 = m(x - x_1)$

$y' = \frac{(x \times 3e^{3-2x})}{4}$      $y - y_1 = (-2x + 3e^{3-2x})(x - \frac{3}{2})$

Value? never a function...

$$y = \frac{u}{v} \Rightarrow \frac{u'v - uv'}{v^2}$$

2) Find the derivative of  $f(x) = \frac{(5x-1)^3}{x}$  (15 points)

$$y' = \frac{(x)(3(5)(5x-1)^2) - (5x-1)^3(1)}{x^2}$$

$$y' = \frac{15x(5x-1)^2 - (5x-1)^3}{x^2}$$

$$y' = \frac{15x(1^2) [(5x - 5x - 1)]}{x^2}$$

simplify

3) Find the derivative  $g(x) = 7x^3 + \frac{1}{e^{2x}} + e^x + \ln(5x^2 + 9)$  (15 points)

$$g'(x) = 21x^2 + \frac{-3}{e^{3x}} + e^x + \frac{10x}{5x^2 + 9}$$