Prepa Tec
Calculus I 2nd partial
Quiz # 2A

Name Elda Sarahi Del Rio Santillan Mat. A01570233

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

1. True The derivative of $y = 6 - e^{-x}$ is $y' = e^{-x}$

2. False The derivative of $y = Ln(x-4)^{3/2}$ is $y' = \frac{3}{2} Ln(x-4)^{1/2}$

3. True 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.

4. True 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.

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

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

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

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) $y' = \frac{1}{x-2}$

3. (C) 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) $a(t) = 6t^2 e^{6t}(2t+1)$ B) $a(t) = 6t^2 e^{6t}$

C) $a(t) = 36t^2 e^{6t}$ D) $a(t) = 12t^3 e^{6t}$

III. Answer the following questions.

(3/2 , 1/6)

1) Find the SLOPE (pendiente) of the line tangent to $y = \frac{e^{3-2x}}{6}$ at $x = 3/2$ (20 points)

$y = \frac{e^{3-2x}}{6}$ $\quad ux = e^{3-2x}$ $\quad u'x = 2e^{3-2x}$ $\quad e^{3-2x} \Rightarrow -2e^{3-2x}$

$vx = 6$ $\quad v'x = 0$

$$\frac{6 \cdot 2e^{3-2x} - e^{3-2x} \cdot 0}{36} = \frac{12e^{3-2x}}{36} = \frac{1e^{3-2x}}{3}$$

$$m = \frac{1e^{3-2(3/2)}}{3} = \frac{1}{3}$$

$m = \frac{1}{3}$

20

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

$f(x) = \frac{(2x-1)^5}{x}$ $\quad ux = (2x-1)^5$ $\quad u'x = 10(2x-1)^4$

$vx = x$ $\quad v'x = 1$

$(2x-1)^5$

$5(2x-1)^4 \cdot 2$

$10(2x-1)^4$

$$\frac{x \cdot 10(2x-1)^4 - (2x-1)^5 \cdot 1}{x^2} = \frac{10(2x-1)^4 - (2x-1)^5}{x}$$

→ No puedes cancelar por el x^2

$f'(x) = \frac{10(2x-1)^4 - (2x-1)^5}{x}$

15

3) Find the derivative $g(x) = 3x^2 + \frac{1}{e^{2x}} + \ln(4x^2+3) + e$ (15 points)

$g(x) = 3x^2 + \frac{1}{e^{2x}} + \ln(4x^2+3) + e$

$g'(x) = 6x + \left(-\frac{2}{e^{2x}}\right) + \frac{8x}{4x^2+3} + 0$

$g'(x) = 6x - \frac{2}{e^{2x}} + \frac{8}{4x^2+3}$

$\ln(4x^2+3)$

$\frac{1}{4x^2+3} \cdot (8x)$

$= \frac{8x}{4x^2+3}$

$e^1 = 0 \cdot e$

$\frac{1}{e^{2x}}$ $\quad ux = 1$ $\quad u'x = 0$

$vx = e^{2x}$ $\quad v'x = 2e^{2x}$

$$\frac{e^{2x} \cdot 0 - 1 \cdot 2e^{2x}}{(e^{2x})^2}$$

$$\frac{-2e^{2x}}{(e^{2x})^2} = -\frac{2}{e^{2x}}$$

15