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) 20

1. T The derivative of $y = 6 - e^{-x}$ is $y' = e^{-x}$

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

3. 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.

4. T 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) 30

1. (C) 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) $y' = 6x^2 e^{3/x}$

$\frac{3}{x} \to 3x^{-1}$

$2e^{3x^{-1}} \to -3x^{-2}$

$-6x^{-2} e^{3x^{-1}}$

$\frac{-6e^{3/x}}{x^2}$

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

$\frac{(2x-4)^{-1/2}}{(2x-4)^{1/2}}$

3. (A) 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) $a(t) = 12t^3 e^{6t}$

$u = 2t^3 \quad u' = 6t^2$

$v = e^{6t} \quad v' = 6e^{6t}$

$2t^3 6e^{6t} + 6t^2 e^{6t}$

$12t^3 e^{6t} + 6t^2 e^{6t}$

$6t^2 e^{6t}(2t+1)$

III. Answer the following questions.

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

$u = e^{3-2x}$ $\quad u' = -2e^{3-2x}$

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

$$y' = \frac{6(-2e^{3-2x}) - e^{3-2x}(0)}{6^2}$$

$$y' = \frac{-12e^{3-2x}}{36}$$

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

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

$u = (2x-1)^5$ $\quad u' = 10(2x-1)^4$

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

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

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

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

$$\boxed{f'(x) = \frac{(2x-1)^4(8x-1)}{x^2}}$$

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

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

D. Derivada de una constante = 0

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