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Nombre del tema: Problemario

Parcial: IV Unidad

Nombre de la Materia: Calculo

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Nombre de la Licenciatura: Enfermería

Semestre: 4 Semestre

Problemario

$1= y = 2x^3 - 6x^2 - 7 + 11$

$\quad y' = 6x^2 - 2x - 11$

$2= y = \dfrac{11}{4}x^3 + \dfrac{7}{3}x^2$

$\quad y' = \dfrac{33}{4}x^2 + \dfrac{14}{3}x$

$3= y = 11 - 2x^2 - 6x^3$

$\quad y' = -x^2 - 18x^2$

$4= y = \dfrac{x}{x^2-8x}$

$u = x \qquad v = x^2 - 8x$

$du = 1 \qquad dv = 2x - 8$

$\qquad v^2 = (x^2 - 8x)$

$\dfrac{vdu - udv}{v^2}$

$y' = \dfrac{(x^2-8x)(1)-(x)(2x-8)}{(x^2-8x)^2}$

$y' = \dfrac{x^2 - 8x - 2x^2 + 8x}{(x^2-8x)^2} = \dfrac{x^2}{(x^2-8x)^2}$

$5= y = \dfrac{5}{3x-4}$

$u = 5 \qquad v = 3x - 4$

$du = 0 \qquad dv = 30$

$y' = \dfrac{(3x-4)(0)-5(30)}{(3x-4)^2}$

$6= y = (3x+2)(2x-1)$

$u = 3x+2 \qquad v = 2x-1$

$du = \qquad dv = 2$

$\qquad v^2 = (2x-1)^2$

$y' = \dfrac{3(2x-1)\ 2(3x+2)}{(2x-1)2-(x-3)}$

$\dfrac{(2x+4)}{(2x-1)^2}$

$= \dfrac{6x - 3 - 6x - 4}{(2x-1)^2}$

$= -7 \qquad (2x)^2$

7> $y = \dfrac{(3x^2+1)}{2x}$

$u = (3x^2+1)$ $v = 2x$

$du = 6x$ $dv = 2$

$y' = \dfrac{(2x)(6x) - (3x^2+1)(2)}{(2x)^2}$

$y' = \dfrac{2^2 - 6x^2 + 2}{4x^2} = \dfrac{6x^2 - 2}{4x^2}$

$y' = \dfrac{3}{2} - \dfrac{1}{2x^2}$ $y' = \dfrac{x^2 + 10x - 4}{(4+x^2)^2}$

8> $y = (1+2x)^2$

$u = 1 + 2x$

$n = 2$

$n - 1 = 1$

$dv = 2$

$y' = 2(1+2x)^2 - (2)$

$y' = 4 \cdot (1+2x)^2$

10 = $y = \dfrac{3}{5}x^2 - \dfrac{3}{4}x + \dfrac{1}{8}$

$\dfrac{3}{5}\dfrac{d}{dx}(x^2) - \dfrac{3}{4}\dfrac{d}{dx}(x) + \dfrac{d}{dx}\left(\dfrac{1}{8}\right)^0$

$\dfrac{3}{5}\dfrac{2}{1}x - \dfrac{3}{4}(1)$

$\dfrac{6}{5}x - \dfrac{3}{4}$

11 = $y = \dfrac{2x^2}{Tan\, x^2}$

$u = 2x^2$ $v = Tan\, x^2$

$du = 4x$ $dv = 2x\, sec^2 x^2$

$v^2 = (Tan\, x^2)^2$

$y' = \dfrac{4x\, Tan\, x^2 - 4x^3 sec^2 x^2}{(Tan\, x^2)^2}$

$y' = \dfrac{4x(Tan\, x^2 - x^2 sec\, 2x^2)}{(Tan\, x^2)^2}$

12= $y = 3x^2 \cos 3x^2$

$u = 3x^2$ $v = \cos 3x^2$ $y' = 3x^2(-6x \sen 3x^2) + 6x(\cos 3x^2)$

$du = 6x$ $dv = 6x \sen 3x^2$ $y' = 18x^3 \sen 3x^2 + 6x \cos 3x^2$

13= $y = \sen y^2 \cdot \cos x^2$

$u = \sen x^2$ $v = \cos x^2$

$du = 2x \cos x^2$ $dv = -2x \sen x^2$

$$y' = (\sen x^2)(-2x \sen x^2) + (\cos x^2)(2x \cos x^2)$$
$$y' = (\sen x^2)(-2x + 1) + (\cos x^2)(2x + 1)$$

14= $y = \cot 3x^3$

$$y' = \csc^2 3x^3 \frac{d}{dx}(3x^3)$$
$$y' = 9x^2 \csc^2 3x^3$$

15= $y = \sqrt{2x^3 \cos x^2} = \sqrt{2x^3} \sqrt{\cos x^2}$

$u = \sqrt{2x^3}$ $v = \sqrt{\cos x^2}$

$v = \sqrt{2x^3}^{1/2}$ $v = (\cos x^1)^{\frac{1}{2}}$

$u = 2x^{3/2}$ $dv = \frac{1}{2}(\cos x)$

$3\sqrt{x} \sqrt{\cos x^2}$ $dv = 3x^{1/2} \; 2x \sen x^2$ $dv = 3\sqrt{x}$ $dv = x \sen x^2$

$$y' = \sqrt{2x^2} \; x \sen x^2 \qquad\qquad y = \cos x^2$$
$$y' = 3\sqrt{\cos x^2}$$

16= $y = \sqrt{2x^3 \text{ scn } 2x}$

$v = \sqrt{\text{sec } 2x}$

$u = (\text{sec } 2x)^{\frac{1}{2}}$

$dv = \frac{1}{2}(\text{sec } 2x) \cdot 2\text{ sec } 2x \cdot \text{Tan } 2x$

$du = \dfrac{\text{sec } 2x \cdot \text{Tan } 2x}{\sqrt{\text{sec } 2x}}$

$y' = \dfrac{3\sqrt{x} \cdot \text{sec } 2x \cdot \text{Tan } 2x + 3\sqrt{x} \sqrt{\text{sec } 2x}}{\sqrt{\text{sec } 2x}}$

$y' = 3\sqrt{x} \text{ sec } 2x \text{ tan } 2x$

$y' = \sqrt{\text{sec } 2x} + 3\sqrt{x} \text{ sec } 2x$

17= $y = 2x^3 \sqrt{5x^5}$

$u = 2x^3 \qquad v = \sqrt{5x^5}$

$du = 6x^2 \qquad dv = \dfrac{)3x^2}{2(5x^3)^{1/2}} = \dfrac{15x}{2\sqrt{5x}}$

$y' = \dfrac{15x^3}{\sqrt{5x^2}} + 6x^2 \sqrt{5x^3}$

18= $y = 4 \text{ sec } 2x^4$

$y' = 4 \text{ sec } 2x^4 \text{ tan } 2x^4 \ \frac{d}{dx}(2x^4)$

$y' = y(8x^3) \text{ sec } 2x^4 \cdot \text{tan } 2x^4$

$y' = 3 \cdot 2x^3 \text{ sec } 2x^4 \text{ tan } 2x^4$

$14 = y = (\cos 2x)^3$

$v = \cos 2x^3$

$n = 3$

$n-1 = 2$

$dv = -6x^2 \operatorname{sen} 2x^3$

$y' = 3(\cos 2x^3)^2 \cdot (-6x^2 \operatorname{sen} 2x^3)$

$y' = -18x^2 (\cos 2x^3)^2 \operatorname{sen} 2x^3$

$20 = y = \left(\dfrac{1}{\operatorname{sen} x^2}\right)^2 \qquad y = (\operatorname{sen} x^2) - 2$

$n = -2$

$n-1 = -B$

$u = \operatorname{sen} x^2$

$y' = -2 (2x \cos) x^2$

$y' = -2 (2x \cos x^2)(\operatorname{sen} x^2)^3$

$y' = 4x \cos x^2 (\operatorname{sen} x^2)^3$