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Nombre del trabajo:

Examen

Materia:

Ecuaciones diferenciales.

Grado: 3 cuatrimestre

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$$\textcircled{1} \quad y = 2x^2 \sqrt{2+x} \quad \begin{array}{l} u = 2x^2 \\ du = 4x \end{array} \quad \begin{array}{l} v = \sqrt{2+x} \\ dv = \frac{1}{2} (2+x)^{-1/2} \end{array}$$

$$y = 2x^2 \left(\frac{1}{2} \sqrt{2+x} \right) + (\sqrt{2+x})$$

$$y = 2x^2 \sqrt{2+x}$$

$$\textcircled{2} \quad \frac{x^2}{\sqrt{1+x^3}} \quad \begin{array}{l} u = x^2 \\ du = 2x \end{array} \quad \begin{array}{l} v = \sqrt{1+x^3} = (1+x^3)^{1/2} \\ dv = \frac{3}{2} (1+x^3)^{-1/2} \cdot 3x \end{array}$$

$$\frac{3}{2} \cdot \frac{2}{2} = \frac{1}{2} \quad dv = \frac{9}{2} (1+x^3)^{-1/2} \cdot 3x$$

$$dv = \frac{9}{2} x^2 \sqrt{1+x^3}$$

$$y = x^2 \left(\frac{9}{2} x^2 \sqrt{1+x^3} \right) + (\sqrt{1+x^3}) (2x)$$

$$y = \frac{9}{2} x^4 \sqrt{1+x^3} + 2x \sqrt{1+x^3}$$

$$y = \sqrt{1+x^3} \left(\frac{9}{2} x^4 + 2x \right)$$

$$\textcircled{3} \quad y = \frac{1}{x^2} + \frac{x^4}{4} \quad \frac{1}{x^2} + \frac{x^4}{4} \quad \frac{c}{x^a} = Cx^{-a}$$

$$\frac{1}{x^2} = 1x^{-2} \quad + \quad \frac{-4}{x^4} = -4x^{-4}$$

4

$$y = \frac{(x+2)^2}{4}$$

$$y = \frac{2x + 4}{4}$$

$$y = \frac{2x + \cancel{4}}{4}$$

$$y = \frac{-2x}{4}$$

$$\textcircled{5} \int \frac{(1+x)^2 dx}{\sqrt{x}} \quad \int \frac{du}{\sqrt{a^2 - u^2}} = \arcsin \frac{u}{a} + C$$

$$\int \frac{(1+x)^2 dx}{\sqrt{x^2}} = \arcsin \sqrt{x^2} + C$$

$$\textcircled{6} \int \frac{\sqrt{x}}{x^2} dx \quad \int \frac{du}{a^2 + u^2} = \frac{1}{a} \arctan \frac{u}{a} + C$$

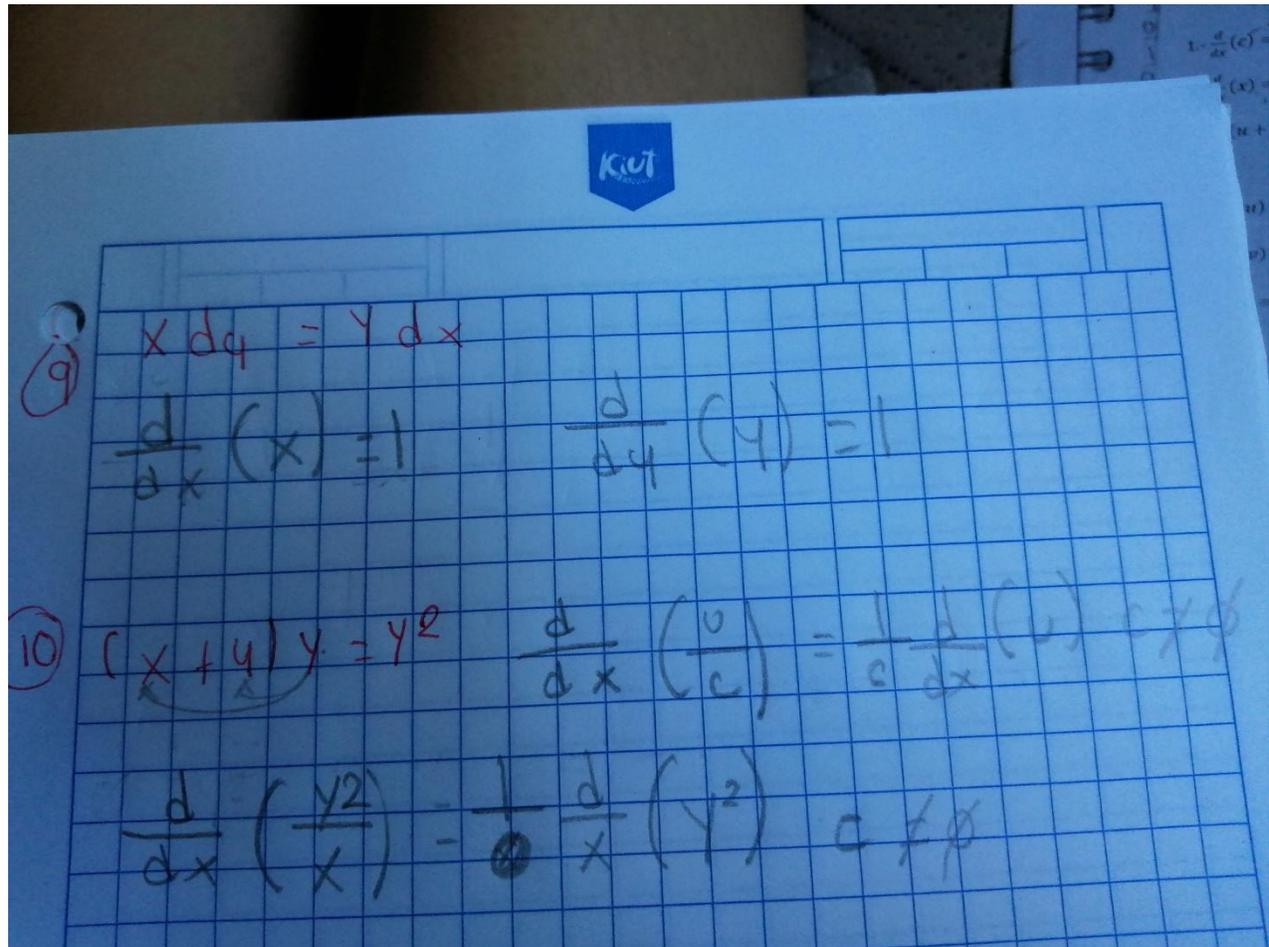
$$\int \frac{x^{\frac{1}{2}}}{x^2} dx = \frac{1}{x^2} \arctan \frac{\sqrt{x}}{x^2} + C$$

$$\textcircled{7} \int \frac{2x^3}{3\sqrt{x^2}} dx \quad \int \frac{du}{u\sqrt{u^2 - a^2}} = \frac{1}{a} \arcsin \frac{|u|}{a} + C$$

$$\int \frac{2x^3}{3\sqrt{x^4 - 1}} dx = \frac{1}{dx} \arcsin \frac{|3|}{dx} + C$$

$$\textcircled{8} \int \frac{dx}{4x^2 + 9} \quad \int \frac{du}{a^2 + u^2} = \arctan \frac{u}{a} + C$$

$$\frac{1}{3} \arctan \frac{2x}{3} + C$$



NOTA!!!!

Los ejercicios los resolví así espero que estén bien, espero su respuesta que tenga buen día.