EJERCICIOS PARA LA TAREA 03– U1

Encontrar dy/dx de las siguientes funciones:

$$y=\sqrt[3]{1+\sqrt[3]{1+\sqrt[3]{x}}} \qquad \textbf{Rpta.} \quad \frac{dy}{dx}=\frac{1}{27}(1+\sqrt[3]{1+\sqrt[3]{x}})^{-2/3}(1+\sqrt[3]{x})^{-2/3}x^{-2/3}$$

$$y=\operatorname{arctg}\frac{\sqrt{1-\cos x}}{\sqrt{1+\cos x}} \qquad \textbf{Rpta.} \quad \frac{dy}{dx}=\frac{1}{2}$$

$$y=\frac{\cos x}{2\operatorname{sen}^2 x}-\frac{1}{2}\ln(\operatorname{tg}\frac{x}{2}) \qquad \textbf{Rpta.} \quad \frac{dy}{dx}=-\frac{1}{\operatorname{sen}^3 x}$$

$$y=\frac{\operatorname{tg} x-\operatorname{tg}^3 x}{1-6\operatorname{tg}^2 x+\operatorname{tg}^4 x} \qquad \textbf{Rpta.} \quad \frac{dy}{dx}=\frac{1}{\cos^2 4x}$$

$$y=\operatorname{arctg}\frac{e^x-e^{-x}}{e^x+e^{-x}}-arc.\operatorname{tg}\frac{\cos x+2\operatorname{sen} x}{\operatorname{sen} x-2\cos x} \qquad \textbf{Rpta.} \quad \frac{dy}{dx}=\frac{1}{\cosh 2x}+1$$

$$y=arc.\cos(\frac{x^{2n}-1}{x^{2n}+1}) \qquad \textbf{Rpta.} \quad \frac{dy}{dx}=-\frac{2nx^{n-1}}{x^{2n}+1}$$

$$y=\frac{1}{m\sqrt{ab}}arc.\operatorname{tg}(e^{mx}\sqrt{\frac{a}{b}}) \qquad \textbf{Rpta.} \quad \frac{dy}{dx}=\frac{1}{ae^{mx}+be^{-mx}}$$

$$y=\frac{1}{\sqrt{x}}e^{x^2 arc.\operatorname{tg} x+\frac{1}{2}Lnx+1} \qquad \textbf{Rpta.} \quad \frac{dy}{dx}=(2x-\frac{1}{1+x^2})\frac{e^{x^2 arc.\operatorname{tg} x+\frac{1}{2}Lnx+1}}{\sqrt{x}}$$

$y = Ln(\operatorname{tg}\frac{x}{2}) - c\operatorname{tg} x.Ln(1+\operatorname{sen} x) - x$ **Rpta.** $\frac{dy}{dx} = \frac{Ln(1+\operatorname{sen} x)}{\operatorname{sen}^2 x}$

$y = \frac{1}{4}\ln(\frac{1+x}{1-x}) - \frac{1}{2}\operatorname{arctg} x$ **Rpta.** $\frac{dy}{dx} = \frac{x^2}{1-x^4}$

$y = \ln(x + \sqrt{x^2 - 1})$ **Rpta.** $\frac{dy}{dx} = \frac{1}{\sqrt{x^2 - 1}}$

$y = \sqrt{x}arc.\operatorname{sen}\sqrt{x} + \sqrt{1-x}$ **Rpta.** $\frac{dy}{dx} = \frac{1}{2\sqrt{x}} arc.\operatorname{sen}\sqrt{x}$

$y = Ln(\sqrt{2\operatorname{sen} x + 1} + \sqrt{2\operatorname{sen} x - 1})$ **Rpta.** $\frac{dy}{dx} = \frac{\cos x}{\sqrt{4\operatorname{sen}^2 x - 1}}$

$y = Ln\sqrt{\frac{1+\operatorname{sen} x}{1-\operatorname{sen} x}}$ **Rpta.** $\frac{dy}{dx} = \frac{1}{\cos x}$

$e^y = x + y$ **Rpta.** $\frac{dy}{dx} = \frac{1}{e^y - 1}$

$\ln y + \frac{x}{y} = k$ **Rpta.** $\frac{dy}{dx} = \frac{y}{x - y}$

$y = x + \text{arc.tg}y$ **Rpta.** $\frac{dy}{dx} = \frac{1+y^2}{y^2}$

$x^3 + 2x^2y - xy^2 + 2y^3 = 2$ **Rpta.** $\frac{dy}{dx} = \frac{3x^2 + 4xy - y^2}{2xy - 2x^2 - 6y^2}$

$x^3 - 3axy + y^3 = a^3$ **Rpta.** $\frac{dy}{dx} = \frac{ay - x^2}{y^2 - ay}$