FICHA nº6 :

102.- $y = e^{x/2} \cdot (3x+1)$

$$y' = e^{x/2} \cdot \frac{1}{2} \cdot (3x+1) + e^{x/2} \cdot 3 = e^{x/2} \cdot \left[\frac{3x+1}{2} + 3\right]$$

103.- $y = e^{\sqrt{3x}}$; $y' = e^{\sqrt{3x}} \cdot \frac{1}{2} \cdot (3x)^{-1/2} \cdot 3$

$$y' = \frac{3 \cdot e^{\sqrt{3x}}}{2\sqrt{3x}}$$

104.- $y = \ln(1+e^{2x})$; $y' = \frac{e^{2x} \cdot 2}{1+e^{2x}}$

105.- $y = 4 \cdot \operatorname{sen}(2x+1)$; $y' = 4 \cdot \cos(2x+1) \cdot 2$

106.- $y = \operatorname{sen} 5x$; $y' = \cos 5x \cdot 5$

107.- $y = \cos(4x-1)$; $y' = -4 \operatorname{sen}(4x-1)$

109.- $y = \tan 3x$; $y' = \frac{1}{\cos^2 3x} \cdot 3$

109.- $y = 8 \cdot \tan \frac{3x-1}{16}$; $y' = 8 \cdot \frac{1}{\cos^2\left(\frac{3x-1}{16}\right)} \cdot \frac{3}{16}$

110.- $y = \operatorname{sec}(2x) = \frac{1}{\cos 2x} = (\cos 2x)^{-1}$

$$y' = -1 \cdot (\cos 2x)^{-2} \cdot (-\operatorname{sen} 2x) \cdot 2 = \frac{2 \operatorname{sen} 2x}{\cos^2 2x}$$

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

112.- $y = \operatorname{sen} 4x \cdot \cos 4x$; $y' = 4\cos 4x \cdot \cos 4x - 4 \operatorname{sen} 4x \cdot \operatorname{sen} 4x$

113.- $y = 5 \cdot e^{\cos 3x}$; $y' = 5 \cdot e^{\cos 3x} \cdot (-\operatorname{sen} 3x) \cdot 3$

114.- $y = 4 \cdot \cos^2\left(\frac{x}{5}\right) + 3x$; $y' = 4 \cdot 2 \cdot \cos\left(\frac{x}{5}\right) \cdot \left(-\operatorname{sen}\frac{x}{5}\right) \cdot \frac{1}{5} + 3$

$$y' = -\frac{8}{5} \cdot \cos\frac{x}{5} \cdot \operatorname{sen}\frac{x}{5} + 3$$

115.- $y = \dfrac{\cos 2x}{1 + \tan 2x}$; $y' = \dfrac{-\operatorname{sen} 2x \cdot 2 \cdot (1+\tan 2x) - \cos 2x \cdot \frac{1}{\cos^2 2x} \cdot 2}{(1+\tan 2x)^2}$

$$y' = \frac{-2 \cdot \operatorname{sen} 2x \cdot (1+\tan 2x) - \frac{2}{\cos 2x}}{(1+\tan 2x)^2}$$

116.- $y = \cos\left(\frac{x}{2}\right)^4$; $y' = -\operatorname{sen}\left(\frac{x}{2}\right)^4 \cdot 4\left(\frac{x}{2}\right)^3 \cdot \frac{1}{2}$

$$y' = -\frac{x^3}{4} \cdot \operatorname{sen}\left(\frac{x}{2}\right)^4$$

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

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

119.- $y = \tan^3(5x)$; $y' = 3\tan^2(5x) \cdot \frac{1}{\cos^2 5x} \cdot 5$

120.- $y = \frac{1}{x} \cdot e^{\operatorname{sen} x} = \dfrac{e^{\operatorname{sen} x}}{x}$

$$y' = \frac{e^{\operatorname{sen} x} \cdot \cos x \cdot x - e^{\operatorname{sen} x} \cdot 1}{x^2} = \frac{e^{\operatorname{sen} x} \cdot [x \cdot \cos x - 1]}{x^2}$$

121.- $y = \sqrt{\operatorname{sen} 2x} = (\operatorname{sen} 2x)^{1/2}$; $y' = \frac{1}{2}(\operatorname{sen} 2x)^{-1/2} \cdot (\cos 2x) \cdot 2$

$$y' = \frac{\cos 2x}{\sqrt{\operatorname{sen} 2x}}$$