Punto 8 Derivación

a) $P_n(x) = \sum_{i=0}^{n-1} f(x_i) L_i(x)$ $\quad L_i(x) = \underset{j \neq i}{\overset{n-1}{\underset{i=0}{}}} \frac{x - x_i}{x_i - x_j}$

$$P_2(x) = f(x_0)\left(\frac{(x-x_1)(x-x_2)}{(x_0-x_1)(x_0-x_2)}\right) + f(x_1)\left(\frac{(x-x_0)(x-x_2)}{(x_1-x_0)(x_1-x_2)}\right)$$

$$+ f(x_2) = \left(\frac{(x-x_0)(x-x_1)}{(x_2-x_0)(x_2-x_1)}\right)$$ es el polinomio interpolador

b) Derivada de P_2

$$P_2(x) = f(x_0)\left(\frac{x^2 - x_2x - x_1x + x_2x_1}{x_0^2 - x_2x_0 - x_1x_0 + x_2x_1}\right)$$

$$+ f(x_1)\left(\frac{x^2 - x_2x - xx_0 + x_2x_0}{x_1x_0 - x_1x_2 - x_1^2 + xx_0}\right) + f(x_2)\left(\frac{x^2 - x_0x - x_1x + x_1x_0}{x_2^2 - x_0x_2 - x_1x_2 + x_0x_1}\right)$$

$$P_2(x)' = f(x_0)\left(\frac{2x - x_2 - x_1}{x_0^2 - x_2x_0 - x_1x_0 + x_2x_1}\right)$$

$$+ f(x_1)\left(\frac{2x - x_2 - x_1}{x_1x_0 - x_2x_1 - x_1^2 + x_0x_2}\right) + f(x_2)\left(\frac{2x - x_0 - x_1}{x_2^2 - x_0x_2 - x_1x_2 + x_1x_0}\right)$$

e)

$$\frac{d}{dx}\left(\sqrt{\tan(x)}\right) = \underbrace{\sec^2(x) \cdot \frac{1}{2\sqrt{\tan x}}}_{\text{ley de la cadena}}$$