PROBLEMA 7.9 $f(x)$; $x_0 = 1$

$$P_4(x|f,1) = 2(x-1)^3 - 3(x-1)^4$$

Puesto que:

$$P_4(x|f,1) = f(1) + f'(1)(x-1) + \frac{f''(1)}{2}(x-1)^2 + \frac{f'''(1)}{3!}(x-1)^3 + \frac{f^{(4)}(1)}{4!}(x-1)^4$$

$$\Rightarrow f(1) = 0 \; ; \; f'(1) = 0 \; ; \; f''(1) = 0 \; ;$$

$$f'''(1) = 3! \, 2 = 12$$

$$f^{(4)}(1) = -4! \, 3 = -72$$

- La recta tangente a la gráfica de $x_0 = 1$ es la recta $y = 0$ (recta de pendiente 0 que pasa por $y_0 = 0$)

- $$\lim_{x \to 1} \frac{f(x)}{(x-1)^3} = \lim_{x \to 1} \frac{2(x-1)^3 - 3(x-1)^4 + o((x-1)^4)}{(x-1)^3} =$$

$$= 2$$

- $$f^{(4)}(1) = -72$$