Ivan Plazas -> 20171027

Julian Eduardo Gomez - 20142080

5) A Partir de las definiciones de primera y segunda derivada central

$$f'(x_i) = \frac{f(x_i+1) - f(x_i-1)}{2h}$$

$$f''(x_i) = \frac{f(x_i+2) - 2f(x_i) + f(x_i-2)}{4h^2}$$

Al derivar $f''(x_i)$ se obtiene la expresión de la tercera derivada

$$f'''(x_i) = \frac{f'(x_i+2) - 2f'(x_i) + f'(x_i-2)}{4h^2}$$

$$f'''(x_i) = \frac{\left(\frac{f(x_i+3) - f(x_i+1)}{2h}\right) - 2\left(\frac{f(x_i+1) - f(x_i-1)}{2h}\right) + \left(\frac{f(x_i-1) - f(x_i-3)}{2h}\right)}{4h^2}$$

$$f'''(x_i) = \frac{f(x_i+3) - 3f(x_i+1) + 3f(x_i-1) - f(x_i-3)}{\frac{2h}{4h^2}}$$

$$f'''(x_i) = \frac{f(x_i+3) - 3f(x_i+1) + 3f(x_i-1) - f(x_i-3)}{8h^3}$$