Ejercicio Derivación

Punto 1

$$f(x_i+2) = f(x_i) + 2h f'(x_i) + 2h^2 f''(x_i) + \frac{8h^3}{6} f'''(x_i)$$

$$f(x_i-2) = f(x_i) - 2h f'(x_i) + 2h^2 f''(x_i) - \frac{8h^3}{6} f'''(x_i)$$

Sumando las 2 expansiones:

$$f(x_i+2) + f(x_i-2) = 2f(x_i) + 4h^2 f''(x_i)$$

Ahora se resta $2f(x_i)$

$$f(x_i+2) + f(x_i-2) - 2f(x_i) = 4h^2 f''(x_i)$$

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