DD MM AA

1) A partir de la definición de derivada central:

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

Si se deriva esta expresión:

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

$$f''(x_i) = \frac{\left(\frac{f(x_{i+2}) - f(x_i)}{2h}\right) - \left(\frac{f(x_i) - f(x_{i-2})}{2h}\right)}{2h}$$

$$f''(x_i) = \frac{\left(\frac{f(x_{i+2}) - f(x_i)}{2h}\right) + \left(\frac{f(x_{i-2}) - f(x_i)}{2h}\right)}{2h}$$

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

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