

Punto 1)

$$f(x) = 0,65x^3 + 0,5x + 1$$

$$x = 1,2$$

$$h = 0,1$$

$$x_i = 1,2 \quad f(x_i) = 2,7232$$

$$x_{i+1} = 1,3 \quad f(x_{i+1}) = 3,07805$$

$$x_{i-1} = 1,1 \quad f(x_{i-1}) = 2,41515$$

$$x_{i+2} = 1,4 \quad f(x_{i+2}) = 3,4836$$

$$x_{i-2} = 1 \quad f(x_{i-2}) = 2,15$$

Primera derivación

$$f'(1,2) \cong \frac{3,07805 - 2,7232}{0,1} = 3,5485$$

$$f'(1,2) \cong \frac{2,7232 - 2,41515}{0,1} = 3,0805$$

$$f'(1,2) \cong \frac{3,07805 - 2,41515}{2(0,1)} = 3,3145$$

Segunda derivación

$$f''(1,2) \cong \frac{3,4836 - 2(3,07805) + 2,7232}{(0,1)^2} = 5,07$$

$$f''(1,2) \cong \frac{2,7232 - 2(2,41515) + 2,15}{(0,1)^2} = 4,29$$

$$f''(1,2) \cong \frac{3,07805 - 2(2,7232) + 2,41515}{(0,1)^2} = 4,68$$

Valor real

primera

$$f'(1,2) = 1,95(1,2)^2 + 0,5 = 3,308$$

segunda

$$f''(1,2) = 3,9(1,2) = 4,68$$

Punto 2)

$$f(x) = 0,65x^3 + 0,5x + 1$$

$$x = 1,2$$

$$h = 0,05$$

$$x_i = 1,2 \quad f(x_i) = 2,7232$$

$$x_{i+1} = 1,25 \quad f(x_{i+1}) = 3,89453$$

$$x_{i-1} = 1,15 \quad f(x_{i-1}) = 2,56357$$

$$x_{i+2} = 1,3 \quad f(x_{i+2}) = 3,07805$$

$$x_{i-2} = 1,1 \quad f(x_{i-2}) = 2,41515$$

Primera derivación

$$f'(1,2) \cong \frac{2,89453 - 2,56357}{2(0,05)} = 3,3096$$

Segunda derivación

$$f''(1,2) \cong \frac{2,89453 - 2(2,7232) + 2,56357}{(0,05)^2} = 4,68$$

Estos son mejores resultados que los anteriores