

③

$$f(x) = x^4 - 2,5x^3 + 3,2x^2 - 2,25x + 9,5$$

$x \neq 1$

$$h = 0,0005$$

$$f(x_1) = 1,95$$

$$f_{x+2} = 1,9926$$

$$10,002$$

$$f_{x+2} = 1,946$$

$$f_{x-2} = 2,022$$

$$1,001$$

$$f_{x+1} = 1,9536$$

Primera diferencia finita Adelante

$$f'(x_1) = \frac{1,946 - 1,95}{0,0005} = -8 //$$

Atras:

$$f'(x_1) = \frac{1,95 - 1,9536}{0,0005} = -7,2 //$$

Centrada

$$\frac{1,946 - 1,9536}{2(0,0005)} = -7,6 //$$

Segunda diferencia Adelante:

$$\frac{1,9926 - 2(1,946) + (1,95)}{0,0005^2} = 2400 //$$

Atras:

$$\frac{1,95 - 2(1,9536) + 2,022}{0,0005^2} = 259200 //$$

$$-4x^3 - 7,5x^2 + 6,4x - 2,25 = -7,35$$

↓
valor verdadero

Primera

Adelante

$$\frac{-7,35 - (-8)}{-7,35} = 8,84 \%$$

Atos

$$\frac{-7,35 - (-7,2)}{-7,35} = 2,040 \%$$

Centrada

$$\frac{-7,35 - (-7,6)}{-7,35} = 3,40 \%$$

Centrado:

$$\frac{1,946 - 2(1,95) + (1,9536)}{0,0005^2} = -1600 //$$

0

2) $f(x) = 1,2x^4 - 0,6x^3 + 2x + 1 = 19,4$ $x_0 + 1 = 2,005$
 $x = 2$

$$f'(x) = 4,8x^3 - 1,8x^2 + 2 = 33,2$$

$$h = 0,005$$

$$f''(x) = 14,4x^2 - 3,6x = 50,4$$

$$f'''(x) = 28,8x - 3,6 = 54$$

$$f^{(4)}(x) = 28,8 = 28,8$$

1) $2 + (33,2) \cdot 0,005 = 2,166$

2) $2,166 + \frac{50,4}{2} \cdot 0,005^2 = 2,16663$

3) $2,16663 + \frac{54}{6} \cdot 0,005^3 = 2,166631125$

4) $2,166631125 + \frac{28,8}{24} \cdot 0,005^4 = 2,166631126 //$

Valor Verdadero

$$1,2(2,005)^4 - 0,6(2,005)^3 + 2(2,005) + 1 = 19,566$$

Valor real

Error verblevend Percentageel

$$f(x) = \frac{19,566 - 19,4}{19,566} = 0,848\%$$

$$f'(x) = \frac{19,566 - 33,2}{19,566} = 69,68\%$$

$$f''(x) = \frac{19,566 - 30,4}{19,566} = 15,8\%$$

$$f'''(x) = \frac{19,566 - 54}{19,566} = 175,9\%$$

$$f^{(4)}(x) = \frac{19,566 - 28,8}{19,566} = 9,971\%$$

④

$$\tilde{x} = 4,25 \quad f(x) = 2 \ln(x^3 - 2x^2 - 3) + e^{-x}$$

$$\Delta x = 0,005$$

$$f(x) = 7,27043$$

$$f'(x) = \left| \frac{2(3x^2 - 4x)}{x^3 - 2x^2 - 3} - e^{-x} \right| \cdot 0,005$$

$$f'(x) = 1,96165 \cdot 0,005 = 0,00980825$$

$$f(x) = [7,27043 - 0,00980825, 7,27043 + 0,00980825]$$

$$[7,26062175, 7,28023825]$$

$$f(x) = \text{degree } f'(x)$$

$$x \in [\tilde{x} - \Delta x, \tilde{x} + \Delta x]$$

$$x \in [4,25 - 0,005, 4,25 + 0,005]$$

$$x \in [4,245, 4,255]$$

①

$$CAFE_{16} = 51966 = 12 \times 16^3 + 10 \times 16^2 + 15 \times 16 + 14$$

$$A513_{12} = 18015 = 10 \times 12^3 + 5 \times 12^2 + 1 \times 12 + 3$$

$$11101100_2 = 236 = 1 \times 2^7 + 1 \times 2^6 + 1 \times 2^5 + 1 \times 2^3 + 1 \times 2^2$$

$$10440_6 = 1964 = 16^4 + 4 \times 6^2 + 4 \times 6$$

$$591_5 = \text{No Existence}$$