(3)

$f(x) = x^4 - 2{,}5x^3 + 3{,}2x^2 - 2{,}25x + 4{,}5$ $x = 1$ $h = 0{,}0005$

$f = x_i = 3{,}95$ $f_{x+2} = 3{,}9506$ $1{,}001$

$f = x_{i+1} = 3{,}950$ $f_{x-2} = 3{,}949$ $1{,}001$

$f_{x_i - 1} = 3{,}9496$

Primera diferencia finita Adelante

$$f'(x_i) = \frac{3{,}95 - 3{,}95}{0{,}0005} = 0$$

Atras:

$$f'(x_i) = \frac{3{,}95 - 3{,}9496}{0{,}0005} = -2$$

centrada

$$\frac{3{,}95 - 3{,}9496}{2(0{,}0005)} = 1$$

Segunda diferencia Adelante:

$$\frac{3{,}9506 - 2(3{,}95) + (3{,}95)}{0{,}0005^2} = 2400$$

Atras:

$$\frac{3{,}95 - 2(3{,}949) + (3{,}949)}{0{,}0005^2} = 4000$$

Centrada:

$$\frac{3{,}95 - 2(3{,}95) + (3{,}949)}{0{,}0005^2} = -4000$$

o

② $f(x) = 1{,}2x^4 - 0{,}6x^3 + 2x + 1 = 19{,}4$ $\qquad x_{i+1} = 2{,}005$

$f'(x) \; 4{,}8x^3 - 1{,}8x^2 + 2 = 33{,}2$ $\qquad x = 2$

$f''(x) = 14{,}4x^2 - 3{,}6x = 50{,}4$ $\qquad h = 0{,}005$

$f'''(x) \; 28{,}8x - 3{,}6 = 54$

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

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 verdadero Porcentual

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

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

$f''(x)\ \dfrac{19,566 - 30,4}{19,566} = 15?,5\ \%$

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

$f''''(x)\ \dfrac{19,566 - 28,8}{19,566} = 0,471\ \%$

4

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

$\Delta x = 0,005$

$f(x) = 7,27043 \qquad f'(x) \left| \dfrac{2(3x^2 - 4x)}{x^3 - 2x^2 - 3} - e^{-x} \right| \cdot 0,005$

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

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

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

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

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

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

1

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

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

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

$10440_6 = 1464 = 16^4 + 4 \times 6^2 + 4 \times 6$

$541_5 =$ No Existe