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Taller 10

• Emplee la expansión de la serie de Taylor de cero hasta tercer orden para predecir f (0,6) si f(x) = 0,5x^3 − 1,5x^2 + 2x – 4 usando como punto base x = 0,5.

$$\boldsymbol{x_i = 0,5}$$

$$\boldsymbol{x_{i+1} = 0,6}$$

$$\boldsymbol{h = 0,1}$$

- **Orden 0**

$$f(0{,}6) \cong f(0{,}5)$$

$$f(0{,}6) \cong 0{,}5(0{,}5)^3 - 1{,}5(0{,}5)^2 + 2(0{,}5) - 4$$

$$f(0{,}6) \cong -3{,}3125$$

- **Orden 1**

$$f(0{,}6) \cong -3{,}3125 + f'(0{,}5)(0{,}1)$$

$$f(0{,}6) \cong -3{,}3125 + (1{,}5(0{,}5)^2 - 3(0{,}5) + 2)(0{,}1)$$

$$f(1{,}6) \cong -3{,}225$$

- **Orden 2**

$$f(0{,}6) \cong -3{,}225 + \frac{f''(0{,}5)}{2!}(0{,}1)^2$$

$$f(0{,}6) \cong -3{,}225 + \frac{3(0{,}5) - 3}{2!}(0{,}1)^2$$

$$f(1{,}6) \cong -3{,}2325$$

- **Orden 3**

$$f(0{,}6) \cong -3{,}2325 + \frac{f'''(0{,}5)}{3!}(0{,}1)^3$$

$$f(0{,}6) \cong -3{,}2325 + \frac{3}{3!}(0{,}1)^3$$

$$f(0{,}6) = -3{,}232$$

• Emplee la expansión de la serie de Taylor de cero hasta tercer orden para predecir f 0,55 si f x = 1,2e^x − 2,8x + 3,3 usando como punto base x = 0,4.

$$\boldsymbol{x_i = 0,4}$$

$$\boldsymbol{x_{i+1} = 0,55}$$

$$\boldsymbol{h = 0,15}$$

- **Orden 0**

$$f(0{,}55) \cong f(0{,}4)$$

$$f(0{,}55) \cong 1{,}2\, e^{0{,}4} - 2{,}8(0{,}4) + 3{,}3$$

$$f(0{,}55) \cong 3{,}970189$$

- **Orden 1**

$$f(0{,}55) \cong 3{,}970189 + f'(0{,}4)(0{,}15)$$

$$f(0{,}55) \cong 3{,}970189 + (1.2\, e^{0{,}4} - 2{,}8)(0{,}15)$$

$$f(0{,}55) \cong 3{,}818718$$

- **Orden 2**

$$f(0{,}55) \cong 3{,}818718 + \frac{f''(0{,}4)}{2!}(0{,}15)^2$$

$$f(0{,}55) \cong 3{,}818718 + \frac{1{,}2\, e^{0{,}4}}{2!}(0{,}15)^2$$

$$f(0{,}55) \cong 3{,}838857$$

- **Orden 3**

$$f(0{,}55) \cong 3{,}838857 + \frac{f'''(0{,}4)}{3!}(0{,}15)^3$$

$$f(0{,}55) \cong 3{,}838857 + \frac{1{,}2\, e^{0{,}4}}{3!}(0{,}15)^3$$

$$f(0{,}55) \cong 3{,}839865$$