S/L T/M Q/M Q/J S/V S/S D/D

Rodrigo (496016)

Tarefa 04 - MNA Sabrina (494013)

$$I_F = \frac{4h}{3}\left(2f(\bar{x}-h) - f(\bar{x}) + 2f(\bar{x}+h)\right)$$

$$I_F = \frac{4h}{3}\Big(2\big(f(\bar{x}) - f'(\bar{x})(h) + \tfrac{1}{2!}f''(\bar{x})(h)^2 - \tfrac{1}{3!}f'''(\bar{x})(h)^3 + \tfrac{1}{4!}f^{IV}(\bar{x})(h)^4 + \dots\big) - f(\bar{x}) + 2\big(f(\bar{x}) + f'(\bar{x})(h) + \tfrac{1}{2!}f''(\bar{x})(h)^2 + \tfrac{1}{3!}f'''(\bar{x})(h)^3 + \tfrac{1}{4!}f^{IV}(\bar{x})(h)^4 + \dots\big)\Big)$$

$$= \frac{4h}{3}\left(3f(\bar{x}) + \frac{4}{2!}f''(\bar{x})(h)^2 + \frac{4}{4!}f^{IV}(\bar{x})(h)^4 + \dots\right)$$

$$I_e = \int_a^b f(x)\,dx = h\int_{-2}^{2} f(\bar{x} + \xi h)\,d\xi$$

$$= h\Big(\int_{-2}^{2} f(\bar{x})\,d\xi + \int_{-2}^{2} f'(\bar{x})(\xi h)\,d\xi + \int_{-2}^{2}\frac{1}{2!}f''(\bar{x})(\xi h)^2\,d\xi + \int_{-2}^{2}\frac{1}{3!}f'''(\bar{x})(\xi h)^3\,d\xi + \int_{-2}^{2}\frac{1}{4!}f^{IV}(\bar{x})(\xi h)^4\,d\xi + \dots\Big)$$

$$= h\left(4f(\bar{x}) + \frac{(h)^2}{2!}f''(\bar{x})\frac{16}{3} + \frac{(h)^4}{4!}f^{IV}(\bar{x})\frac{64}{5} + \dots\right)$$

$$E_a = I_e - I_F = h\left(4f(\bar{x}) + \frac{(h)^2}{2!}f''(\bar{x})\frac{16}{3} + \frac{(h)^4}{4!}f^{IV}(\bar{x})\frac{64}{5} + \dots\right) - \frac{4h}{3}\left(3f(\bar{x}) + \frac{4}{2!}f''(\bar{x})(h)^2 + \frac{4}{4!}f^{IV}(\bar{x})(h)^4 + \dots\right)$$

Retendo-se apenas ao termo dominante:

$$E_a = \frac{64}{5}f^{IV}(\bar{x})(h)^5\frac{1}{4!} - \frac{4}{3}f^{IV}(\bar{x})(h)^5\frac{4}{4!}$$

$$= \frac{1}{4!}f^{IV}(\bar{x})(h)^5\left(\frac{64}{5} - \frac{4.4}{3}\right) = \frac{112}{15.3.8}f^{IV}(\bar{x})(h)^5 =$$

$$= \frac{14}{45}h^5 f^{IV}(\bar{x}) \quad //$$

Jan / Ene | Fev / Feb | Mar / Mar | Abr / Abr | Mai / May | Jun / Jun | Jul / Jul | Ago / Ago | Set / Sep | Out / Oct | Nov / Nov | Dez / Dic

Digitalizado com CamScanner