18.08.20

Nome: Davi A. Neves Leite RA: 191027383

Atividade - 18/08/2020

- Regra 1/3 de Simpson para $\int_2^3 x\, e^{x/2}\, dx$

$$\int_2^3 x\, e^{x/2}\, dx \approx \frac{h}{3}\left[F(x_0)+F(x_4)+2(F(x_2))+4(F(x_1)+F(x_3))\right]$$

$$\int_2^3 x\, e^{x/2}\, dx \approx \frac{0{,}25}{3}\left[5{,}42+13{,}44+2.(8{,}725)+4(6{,}93+10{,}89)\right]$$

$$\therefore \int_2^3 x\, e^{x/3}\, dx \approx 8{,}9658$$

→ Limitante superior para o erro:

$$|E_T| \leq \frac{h^4}{180}(x_n - x_0).\,MAX\{|f^{IV}(x)|;\ x_0 \leq x \leq x_m\}$$

$$*F^{IV}(x) = \frac{(x+8)\, e^{x/2}}{16}$$

$$*MAX\{1{,}6989;\ 1{,}9733;\ 2{,}2905;\ 2{,}6573;\ 3{,}0812\} = 3{,}0812$$

$$\therefore |E_T| \leq \frac{(0{,}25)^4}{180}(3-2).(3{,}0812) = 0{,}0001$$