17.08.20

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Atividade – 17/08/2020

- Regra dos trapézios para $\int_0^4 \ln(1+x)\,dx$

$$\int_0^4 \ln(1+x)\,dx \approx \frac{h}{2}\left[F(x_0)+F(x_4)+2\left(F(x_1)+F(x_2)+F(x_3)\right)\right]$$

$$\Rightarrow \int_0^4 \ln(1+x)\,dx \approx \frac{1}{2}\left[0+1{,}61+2(0{,}693+1{,}1+1{,}387)\right]$$

$$\Rightarrow \boxed{\int_0^4 \ln(1+x)\,dx \approx 3{,}985}$$

→ Limitante superior para o erro:

$$|E_t| \leq \frac{h^2}{12}(x_n - x_0)\cdot \max\{|f''(x)|,\ x_0 \leq x \leq x_n\}$$

$$* \ F''(x) = -\frac{1}{(x+1)^2}$$

$$* \ MAX\{|-1|;|-0{,}25|;|-0{,}1111|;|-0{,}04|\} = 1$$

$$\Rightarrow |E_t| \leq \frac{1^2}{12}(4-0)\cdot 1$$

$$\therefore \boxed{|E_t| \leq 0{,}3333}$$