

Truncation Error: Series Example



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$$\begin{aligned} a) e^{1.2} &\approx 1 + 1.2 + \frac{1.2^2}{2!} \\ &= 1 + 1.2 + \frac{1.44}{2} \\ &= 2.92 \end{aligned}$$

$$\begin{aligned} \text{Trunc. Error} &= \text{Exact Value} - \text{Approx. Value} \\ &= \underline{3.3201} - 2.92 \\ &= 0.4001 \end{aligned}$$



$$\begin{aligned} \text{b) } e^{1.2} &\approx 1 + 1.2 + \frac{1.2^2}{2!} + \frac{1.2^3}{3!} \\ &= 1 + 1.2 + \frac{1.44}{2} + \frac{1.728}{6} \\ &= 3.208 \end{aligned}$$

$$\begin{aligned} \text{Trunc. Error} &= \text{Exact Value} - \text{Approx. Value} \\ &= 3.3201 - 3.208 \\ &= 0.1121 \end{aligned}$$

$$\begin{aligned} \text{3 terms: } e^{1.2} &\approx 2.92, \quad \text{TE} = 0.4001 \\ \text{4 terms: } e^{1.2} &\approx 3.208, \quad \text{TE} = 0.1121 \end{aligned}$$

END



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