

Chapter 01. Errors

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Errors

- Rounding-off errors
 - Limitation of computer in representation of numbers
 - Rounding-off
- Truncation errors
 - Exact mathematical expression
$$e^x = 1 + x + \frac{x^2}{2!} + \frac{x^3}{3!} + \frac{x^4}{4!} + \cdots + \frac{x^n}{n!} + \cdots$$
 - Approximate mathematical expression
$$e^x = 1 + x + \frac{x^2}{2!} + \frac{x^3}{3!} + \frac{x^4}{4!} + \cdots + \frac{x^n}{n!}$$

Estimation of errors

- Absolute errors

- $E_b = |x - \bar{x}|$

- Relative errors

- $E_r = \frac{|x - \bar{x}|}{|x|} \quad E_r = \frac{|x - \bar{x}|}{|x|} \times 100\%$

- Error bound