Notes on the testing of programs

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1 Composite Trapezoidal Rule

[1]

- For this integration,
$$\int_0^1 \frac{4dx}{1+x^2} \approx 3.141593$$
The composite trapezoidal rule matches with the book reference.

- For this integration,
$$\int_{-10}^{10} \frac{dx}{1+x^2} \approx 2.942255$$
The composite trapezoidal rule matches with the book reference.

- For this integration,
$$\int_0^1 \sqrt{x} \approx 0.6666667$$
The composite trapezoidal rule have slight mismatch with the book reference. In the book, for n = 1537, value = 0.6666635, while the program shows 0.6666632.

- For this integration,
$$\int_0^1 \frac{dx}{100x^{0.99}} \approx 1$$
The composite trapezoidal rule program fails showing error *ZeroDivisionError: float division by zero*

- For this integration,
$$\int_0^5 e^{-x^2} \approx 0.785398163$$
The composite trapezoidal rule program shows the result as 0.8862269254512815.

[1] Testing were performed with H.M. Antia book reference

2 Composite Simpson1by3 Rule

[2]

- For this integration,
$$\int_0^1 \frac{4dx}{1+x^2} \approx 3.141593$$
The composite trapezoidal rule matches with the book reference.

- For this integration,
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