

Due date: Shown on the Blackboard.

Please submit:

1. Your MATLAB code.
2. Copy of a screenshot after your program is executed.

Implement MATLAB code that calculates  $e^x$  using the following formula, and measure the absolute error from the MATLAB provided function.

The Taylor series for the exponential function  $e^x$

$$1 + \frac{x^1}{1!} + \frac{x^2}{2!} + \frac{x^3}{3!} + \frac{x^4}{4!} + \frac{x^5}{5!} + \cdots = 1 + x + \frac{x^2}{2} + \frac{x^3}{6} + \frac{x^4}{24} + \frac{x^5}{120} + \cdots = \sum_{n=0}^{\infty} \frac{x^n}{n!}.$$

Plot both (1) the approximated value, and (2) absolute error.

The following example uses  $x = -10$ , and  $n = 50$ . Choose your own  $x$ , and  $n$  values.

Approximation: Green with circle, Error: Blue.

