1 Approximation of Functions

1. Write a MATLAB program to generate Chebyshev polynomials. (**Hint:** Use the M-file given in the book.)

2. Write a MATLAB program using Chebyshev polynomials to economize a Maclaurin series for e^x in the interval [0,1] with a precision of 0.0001. Tabulate the error values. (**Hint:** Utilize the M-file given in the book.)

3. The Chebyshev series and Maclaurin series for e^x are given as the following;
$$e^x = 0.9946 + 0.9973x + 0.5430x^2 + 0.1772x^3$$
$$e^x = 1 + x + 0.5x^2 + 0.1667x^3$$

   - Tabulate the error values for the interval [-1,1].
   - Plot the error values for the interval.