Assignment 1

1. Find Taylor series expansion (first 3 non-zero terms) of

$$f(x) = \frac{e^{2x} - 1}{x} \text{ at } a = -0.5$$

2. Obtain the first three non-zero terms of the Taylor series expansions of *sin(2x)* at the center of expansion $a = 0.5\pi$

3. What is the least number of terms required to compute π with an error less than 0.001 using the series

$$\pi = 4 - \frac{4}{3} + \frac{4}{5} - \frac{4}{7} + \frac{4}{9} - \ldots$$

4. How many terms of the Maclaurin series are needed to approximate

$$f(x) = e^{-0.5x}$$

over the interval [-1,1] with error less than 0.01