

**SCHOOL OF ADVANCED TECHNOLOGY**

ICT - Applications & Programming

Computer Engineering Technology – Computing Science

**Numerical Computing – CST8233**

# Lab #4 – Maclaurin Series

In this lab, you will write a script to implement the Mclaurin Series

You will need to show your lab professor to get your grades.

## Grades:

**2%** of your final course mark

## Deadline

During the lab period of Week 10 (July 11)

## Steps

### Step 1. Maclaurin Series

Maclaurin series are used to expand a function around zero. This series is an infinite series and is given as follows:

where is the *nth* derivative of evaluated at .

### Step 2. Exercise

* It is found that Maclaurin series of is given as below:
* Write the first six terms of this series, . Notice that the first value of is 1 NOT 0.
* Plot the original function against .
* Write an R script that takes the value of as an input from the user, then compute the value of the series for up to ten terms.
* For each term, find the absolute and relative error.

Your output should look like the following table:

n Absolute error Relative error

--------------------------------------

1

2

3

4

5

6

7

8

9

10