Practice – Application of If statement

Approximation of sin(x)

The approximation of sin(x) is given by

$$\sin(x) = \sum_{k=0}^{N} S_k = \sum_{k=0}^{N} \frac{(-1)^k}{(2k+1)!} x^{2k+1}$$

where N = 30000. Given the real value of sin(π/3) is 0.86602 and error approximation 0.0001. Check in the box the method that you will use for computing the approxiamation

- ☐ Vectorization
- ☐ Iteration without stopping condition
- ☐ Iteration with a particular stopping conditioon, eg.

$$|S_k - realval| \leq err$$

- ☐ Interation with a particular stopping condition, eg.

$$|S_{k+1} - S_k| \leq eps$$

where **eps** is the smallest constant in MATLAB can distinguish the difference between two numbers.

Question 1.1 **(5 marks)** Check all the required values that you will use for your script

☐x = pi/3	☐N = 30000	☐realval = 0.86602	☐err = 0.0001

Question 1.2 **(max 35 marks)** Write a script named "Yourname_ID_Q2" to calculate sin(π/3).

Question 1.3 **(10 marks)** write in the box below the number of steps that you use for calculating the approximation. If you use one of the last 2 methods, desribe briefly the advantage of this method
