

# CS110: Computer Programming Lab

## Department of CSE

### IIT, Guwahati

#### Module 02 Stage 03 Exercise 05

##### Problem description

The following infinite series is normally credited to Sir Isaac Newton (circa 1730)

$$\pi = 6 \left( \frac{1}{2} + \frac{1}{2 \cdot 3 \cdot 2^3} + \frac{1 \cdot 3}{2 \cdot 4 \cdot 5 \cdot 2^5} + \frac{1 \cdot 3 \cdot 5}{2 \cdot 4 \cdot 6 \cdot 7 \cdot 2^7} + \dots \right)$$

Using double precision variables, write a program that computes as good a value of  $\pi$  as possible. Note that computer arithmetic is best and correct when a sum of two numbers that are hugely different in their sizes is avoided – always try to add numbers that are nearly similar in size.