

**Assignment #3**  
MATH/CHEM 1317 – Intro to Scientific Computation

1. Compute the 100th term and the value of  $\pi$  predicted by the truncation of the Madhava-Leibniz series at this term:

$$1 - \frac{1}{3} + \frac{1}{5} - \frac{1}{7} + \dots = \frac{\pi}{4} \quad (1)$$

2. Compute the 100th term and the value of  $\pi$  predicted by the truncation of the following Machin-like formula at this term:

$$1 + \frac{1}{3} + \frac{1 \cdot 2}{3 \cdot 5} + \frac{1 \cdot 2 \cdot 3}{3 \cdot 5 \cdot 7} + \dots = \frac{\pi}{2} \quad (2)$$

3. Compute the 100th factor and the value of  $\pi$  predicted by the truncation Viète's formula at this factor:

$$\frac{\sqrt{2}}{2} \times \frac{\sqrt{2 + \sqrt{2}}}{2} \times \frac{\sqrt{2 + \sqrt{2 + \sqrt{2}}}}{2} \times \dots = \frac{2}{\pi} \quad (3)$$