Assignment 1. Warmup exercise Marks 15

Posted on 16.08.2022 and due on 22.08.2022 midnight

---

1. Calculate the sum of first N odd numbers and factorial of N (using `do-while` or `for` loop). **[3]**

2. Calculate the sum of N terms of an AP, GP and HP series for common difference 1.5 and common ratio 0.5. Use of analytical formulae not allowed. **[3]**

3. Calculate the sum of the series given below accurate up to 4 place in decimal, where $n = 1, 2, \ldots$. Plot the sum versus n. **[3]**

$$\sum_n \frac{(-1)^{n+1}}{2^n}$$

4. Consider the following matrices,

$$\mathbf{A} = \begin{pmatrix} 2 & -3 & 1.4 \\ 2.5 & 1 & -2 \\ -0.8 & 0 & 3.1 \end{pmatrix}, \quad \mathbf{B} = \begin{pmatrix} 0 & -1 & 1 \\ 1.5 & 0.5 & -2 \\ 3 & 0 & -2 \end{pmatrix}$$
$$\mathbf{C} = \begin{pmatrix} -2 \\ 0.5 \\ 1.5 \end{pmatrix}, \quad \mathbf{D} = \begin{pmatrix} 1 \\ 0 \\ -1 \end{pmatrix}$$

   Find $\mathbf{AB}$, $\mathbf{D} \cdot \mathbf{C}$ and $\mathbf{BC}$. **[3]**

5. Define your own class / structure *myComplex* and calculate the sum, product and modulus of $(3 - 2i)$ and $(1 + 2i)$. **[3]**