BRAC UNIVERSITY

Inspiring Excellence

MAT 215

Fall 2020

Assignment 01

SET: N

Please write your name and ID on the assignment script. The deadline for submitting the assignment is ***27th October 2020****. Solve* ***all the problems****. You will receive* 5 *bonus marks for* ***submitting your assignment in LaTeX****.* ***No Late submissions will be accepted****.*

Any information you need to solve this exam are given in the question.

Be creative, use your intuition. Answer the questions by yourself. Cheating and Copying will lead to ***50%*** *deduction from your total marks in the course and a Zero in the assignment.* ***Total marks is 50****. Each question carries 10 marks.*

---

1. If $z_1 = -3 - 5i$ and $z_2 = -5 - 7i$ are the two complex numbers, then evaluate $\left|\dfrac{z_1 + z_2 + i^{123}}{z_1 - z_2 - i^{14}}\right|$.

2. If $z = -2\sqrt{3} + 2i$, then find the modulus and principal argument $(Arg(z))$ of z. **Note:** $-\pi < Arg(z) \leq \pi$.

3. Find the roots of the equation $z^4 - \sqrt{2} + \sqrt{6}i = 0$.

4. Use de Moivre's formula to evaluate $\left(-\dfrac{\sqrt{3}}{2} - \dfrac{1}{2}i\right)^{12}$.Express your answer in standard form or, in $a + bi$ form.

5. Find Re(z) and Im(z) from $z = \frac{1}{(1-2i)\ (1+3i)}$