



# III BRAC University

Department of Mathematics and Natural Sciences

**Total Points: 15**

**Assignment-01**

**Course Code: MAT215**

Complex

**Name: SUPORNO GHOSH**

**Student ID: 24301509**

**Section: 12**

**Semester: FALL 2025**

**Submission Date:** \_\_\_\_\_

*Assigned by*

**Partho Sutra Dhor**  
Lecturer, Department of MNS  
BRAC University

**Question 1**

Find all possible values of  $z$  such that

$$z^n = 32\sqrt{3} - 32i$$

Locate them in the complex plane. Show that they are contained in a circle and find the radius of that circle. Also find the angular distance between two adjacent roots.

 **Solution:**

**Question 2**

Consider the equation

$$|z + 7i| + |z - 7i| = 19$$

Describe the above locus in the complex plane.

 **Solution:**

**?** Question 3

Consider the inequality

$$|z + 6| + |z - 6| < 13$$

Describe the above locus in the complex plane.

 Solution:

**Question 4**

Solve the following equation for  $z$ :

$$e^{4z} = \frac{7\sqrt{3}}{2} + \frac{7i}{2}$$

Express  $z$  as  $x + iy$  where  $x, y, \in \mathbb{R}$ .

 **Solution:**

**Question 5**

Prove that

$$\sinh^{-1} z = \ln \left( z + \sqrt{z^2 + 1} \right),$$

 Solution:

**Question 6**

Solve for  $z$ :

$$\operatorname{cosech}^{-1} z = 2 + bi$$

 Solution: