**Practice Sheet 1**

**Part A**

1. Perform each of the indicated operations:

|  |  |  |
| --- | --- | --- |
|  |  |  |

2. Show that

, illustrates the associative law of addition.

3. If evaluate each of the following:



(i) (ii) (iii) (iv)



(v) (vi) (vii) **(viii)**



4. Express each of the following complex numbers in polar form and show them graphically.

(i) (ii) (iii) (iv)



5. Prove that: (i) (ii) (iii)



(iv) .



6. State and prove De Moivre’s Theorem.

7. Evaluate each of the following by De Moivre’s Theorem**:**

|  |  |  |  |
| --- | --- | --- | --- |

8. Find all the roots of the following equations.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |

**Part B**

1. Perform the indicated operations analytically and graphically.

|  |  |
| --- | --- |

1. Describe geometrically the set of points satisfying the following conditions:

|  |  |
| --- | --- |
|  |  |
|  |  |
|  |  |
|  | , |

1. Using the properties of conjugate and modulus, show that:

4. Find the modulus and argument of the following complex numbers:

|  |  |
| --- | --- |
|  |  |

1. Prove that represents a straight line.
2. Prove that represents an ellipse.
3. Find an equation of a circle center at with radius 3.
4. Sketch the region in -plane represented by the following set of points:

|  |  |
| --- | --- |
|  |  |