INTERNATIONAL INDIAN SCHOOL BURAIDAH

Worksheet for the Academic Year 2025-26

CLASS: XI SUBJECT: Mathematics DATE: 05/07/25

LESSON : Complex Numbers and Quadratic Equations

LEVEL 1

1. If $i^{k+1} = i, then\ k\ is$

[a) 2 b) 5 c) 8 d) 3]

2. $i^{-35} =$

[a) i b) - i c) 1 d) -1]

3. Write the following as a complex number

i) $\sqrt{-144}$ $ii)\ \frac{\sqrt{3}}{2} - \frac{\sqrt{-5}}{7}$

4. Write the real and imaginary part of

i) 65 ii) -52i iii) $\sqrt{35} + \sqrt{-15}$

5. Write the conjugate of

i) $i5 + 2$ $ii) - i\sqrt{7}$ $iii)\ 6$ $iv)\ \frac{1+i}{1-i}$ $v)\ \frac{i\sqrt{-9}}{1-\sqrt{-1}}$

LEVEL 2

1. $i^{50}.i^{-25} =$

[a) i b) - i c) 1 d) -1]

2. Find the value of x and y , if $(x + y)(2 - 3i) = 4 + i$

3. Write the conjugate of $\frac{1}{(5-4i)^2}$

3. Express in $a + ib$ form

i) $(2 - i)^2$ $ii)\ \frac{2+i}{2-i}$ $iii)\ \frac{1-\sqrt{-36}}{2-\sqrt{-49}}$

4. Find the modulus of

i) $\frac{2-i}{2+i}$ ii) $i\sqrt{7} - \sqrt{5}$ iii) $(1 + i)^2$

LEVEL 3

1. Find the real number x and y , such that $3x + 2iy - ix + 5y = 7 + 5i$

2. Find the multiplicative inverse of

i) $\frac{1}{i}$ $ii)$ $\frac{1}{3+2i}$ $iii)(5-7i)^2$ iv) $\frac{5+\sqrt{2}i}{5-\sqrt{2}i}$

LEVEL 4

1. $1 + i^{10} + i^{100} - i^{1000} =$

[a) i b) - i c) 1 d) 0]

2. If $Z_1 = 2 + i$ and $Z = -2 + i,$ $find$ $i)$ $Re(Z_1Z_2)$ ii) Im $(1/Z_1Z_2)$

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