sns academy
a fingerprint school
Sincerity, Nobility and Service

Grade: XI **MATHEMATICS – worksheet-2**

1. Prove that the points representing the complex numbers $7+9i, -3+7i, 3+3i$ form a right angled triangle on the Argand diagram.
2. Express the following in the standard form $a+ib$, $\dfrac{i^4+i^9+i^{16}}{3-2i^8-i^{10}-i^{15}}$
3. For what values of $x \text{ and } y$, the numbers $-3+ix^2y$ and x^2+y+4i are complex conjugate of each other?
4. P represents the variable complex number z, find the locus of P if $Re\left(\dfrac{z-1}{z+i}\right)=1$.
5. Solve the equation $x^4-4x^3+11x^2-14x+10=0$ if one root is $1+2i$.
6. Prove by mathematical induction: $1 + 4 + 7 + ... + (3n-2) = \dfrac{1}{2}n(3n-1)$.
7. Prove by the principle of mathematical induction that $n(n+1)(2n+1)$ is divisible by 6 for all $n \in N$.
8. Prove that $x^n - y^n$ is divisible by $(x-y)$ by principles of mathematical induction.
9. Prove: $3^{2n+2}-8n-9$ is divisible by 8.
10. Prove that $n < 2^n$ for all $n \in N$.
11. Write the complex numbers in polar form: (i) $\dfrac{1+i}{1-i}$ (ii) $\dfrac{1+7i}{(2-i)^2}$