

Kendriya Vidyalaya No. 2, Kribhco, Surat

Class – XI Maths holiday homework(Complex numbers and Quadratic equations)

- 1) Find the sum of $2 - 3i$, $-5 + \frac{3}{2}i$ and $\frac{1}{2} - i$.
- 2) Express $3i^3 + 6i^{16} - 7i^{29} + 4i^{27}$ in the form $x + iy$, where $x, y \in R$.
- 3) Taking $z_1 = 12 + 5i$ and $z_2 = 3 - 4i$, verify that $\left| \frac{z_1}{z_2} \right| = \frac{|z_1|}{|z_2|}$.
- 4) Find x and y if $\frac{(1+i)x-2i}{3+i} + \frac{(2-3i)y+i}{3-i} = i$, where $x, y \in R$.
- 5) Solve the system of equations: $Re(z^2) = 0$, $z\bar{z} = 4$.
- 6) Show that $\frac{\sqrt{7}+\sqrt{3}i}{\sqrt{7}-\sqrt{3}i} + \frac{\sqrt{7}-\sqrt{3}i}{\sqrt{7}+\sqrt{3}i}$ is purely real.
- 7) Show that $\frac{\sqrt{x^2+1}+xi}{\sqrt{x^2+1}-xi} + \frac{\sqrt{x^2+1}-xi}{\sqrt{x^2+1}+xi} = \frac{2}{2x^2+1}$, where $x \in R$.
- 8) Find the multiplicative inverse of: $\sqrt{5} + i3$.
- 9) Find the square root of: $-\frac{9}{16}$.
- 10) Find the square root of: $\sqrt{-49}\sqrt{-64}$.