



INDIAN SCHOOL AL WADI AL KABIR

Dept. of Mathematics 2021 - 2022, Class - XI

Work Sheet – Complex Numbers – 2, TERM - 1

DATE: 25-08-2021

Long Answer Type Questions

1.	If $x + iy = \sqrt{\frac{1+i}{1-i}}$; prove that $x^2 + y^2 = 1$
2.	Prove that $a^2 + b^2 = 1$ and $\frac{b}{a} = \frac{2c}{c^2 - 1}$ if $a + ib = \frac{c+i}{c-i}$.
3.	Find real value of θ such that, $\frac{1+i \cos \theta}{1-2i \cos \theta}$ is a real number.
4.	Find real π such that $\frac{3+2i \sin \theta}{1-2i \sin \theta}$ is purely real.
5.	For complex numbers $z_1 = 6+3i$ and $z_2 = 3-i$, find $\frac{z_1}{z_2}$
6.	If $\frac{(a^2+1)^2}{2a-i} = x+iy$, then what is the value of $x^2 + y^2$?
7.	What is the conjugate of $\frac{2-i}{(1-2i)^2}$?

Answers

Q3	Q4	Q5	
$\theta = (2n+1)\frac{\pi}{2}, n \in Z$	$\theta = n\pi$	$\frac{3}{2}(1+i)$	
	Q9	Q10	
	$\frac{(a^2+1)^4}{4a^2+1} = x^2 + y^2.$	$\bar{z} = \frac{1}{25}(-2-11i)$	