



JAYAM TUITION CENTRE.

VETTAVALAM. TIRUVANNAMALAI-DT.

STD: 12
SUB: MATHS
MARKS: 25

EXERCISE TEST -5 (EX:2-7)

2 Mark Questions

5 X 2 = 10

- Find the principal argument $Argz$, when $z = \frac{-2}{1+i\sqrt{3}}$.
- Find the product $\frac{3}{2} \left(\cos \frac{\pi}{3} + i \sin \frac{\pi}{3} \right) \cdot 6 \left(\cos \frac{5\pi}{6} + i \sin \frac{5\pi}{6} \right)$ in rectangular form.
- Find the quotient $\frac{2 \left(\cos \frac{9\pi}{4} + i \sin \frac{9\pi}{4} \right)}{4 \left(\cos \left(\frac{-3\pi}{2} \right) + i \sin \left(\frac{-3\pi}{2} \right) \right)}$ in rectangular form.
- If $\frac{1+z}{1-z} = \cos 2\theta + i \sin 2\theta$, show that $z = i \tan \theta$.
- Write in polar form of the following complex number $\frac{i-1}{\cos \frac{\pi}{3} + i \sin \frac{\pi}{3}}$

5 Mark Questions

3 X 5 = 15

- If $z = x + iy$ and $arg \left(\frac{z-i}{z+2} \right) = \frac{\pi}{4}$, show that $x^2 + y^2 + 3x - 3y + 2 = 0$.
- If $z = x + iy$ and $arg \left(\frac{z-1}{z+1} \right) = \frac{\pi}{2}$, show that $x^2 + y^2 = 1$.
- If $\cos \alpha + \cos \beta + \cos \gamma = \sin \alpha + \sin \beta + \sin \gamma = 0$, show that
 - $\cos 3\alpha + \cos 3\beta + \cos 3\gamma = 3 \cos(\alpha + \beta + \gamma)$ and
 - $\sin 3\alpha + \sin 3\beta + \sin 3\gamma = 3 \sin(\alpha + \beta + \gamma)$.