

CBSE Test Paper 03
CH-05 Complex & Quadratic

1. If $x = \omega^2 - \omega - 3$, ω being a non real cube root of unity, then the value of $x^4 + 6x^3 + 10x^2 - 12x - 19$ is
 - a. 5
 - b. none of these
 - c. 19
 - d. 12

2. Find the Amplitude of $-i$
 - a. $-\frac{\pi}{2}$
 - b. $\frac{\pi}{2}$
 - c. π
 - d. none of these

3. The number of solutions of the equation $Im(z^2) = 0, |z| = 2$ is
 - a. 1
 - b. 4
 - c. 2
 - d. 3

4. Square roots of i are
 - a. $\pm \frac{1}{\sqrt{2}}(1 + i)$
 - b. none of these

c. ± 1

d. $\pm \frac{1}{\sqrt{2}}(1 - i)$

5. Find the Amplitude of $-1 - i$

a. $-3\pi/4$

b. $3\pi/4$

c. $\pi/4$

d. none of these

6. Fill in the blanks:

The complex number $(\sin 135^\circ - i \cos 135^\circ)$ is written in polar form as _____.

7. Fill in the blanks:

The conjugate of complex number $3 + i$ is _____.

8. Express $\left(\frac{1}{2} + \frac{5}{2}i\right) - \frac{3}{2}i + \left(\frac{-5}{2} - i\right)$ in the form of $a + ib$.

9. Express the complex number $\sin 50^\circ + i \cos 50^\circ$ in the polar form.

10. Find the product of complex number $(-5 + 7i)$, $(-13 - 3i)$.

11. If $z_1 = 3 + 2i$ and $z_2 = 2 - i$, then verify that $\overline{z_1 z_2} = \overline{z_1} \overline{z_2}$

12. Simplify the following complex number $\overline{9 - i} + \overline{6 + i^3} - \overline{9 + i^2}$

13. Find the value of $(4 + 3\sqrt{-20})^{1/2} + (4 - 3\sqrt{-20})^{1/2}$.

14. If $x + iy = \frac{(a+i)^2}{2a-i}$, show that $x^2 + y^2 = \frac{(a^2+1)^2}{4a^2+1}$.

15. Write the complex number $z = \frac{i-1}{\cos \frac{\pi}{3} + i \sin \frac{\pi}{3}}$ in the polar form.