DPP
DAILY PRACTICE PROBLEMS

CLASS : XIth
DATE :

Solutions

SUBJECT : MATHS
DPP NO. : 1

Topic :- COMPLEX NUMBERS AND QUADRATIC EQUATIONS

1. The modulus of $\frac{1-i}{3+i}+\frac{4i}{5}$ is

a) $\sqrt{5}$ unit b) $\frac{\sqrt{11}}{5}$ unit c) $\frac{\sqrt{5}}{5}$ unit d) $\frac{\sqrt{12}}{5}$ unit

2. If $\frac{\log x}{a-b}=\frac{\log y}{b-c}=\frac{\log z}{c-a}$ then xyz is equal to

a) 0 b) 1 c) -1 d) 2

3. The area of the triangle formed by the points representing $-z$, iz and $z-iz$ in the Argand plane is

a) $\frac{1}{2}|z|^2$ b) $|z|^2$ c) $\frac{3}{2}|z|^2$ d) $\frac{1}{4}|z|^2$

4. If $\frac{(1+i)^2}{2-i}=x+iy$, then $x+y$ is equal to

a) $-\frac{2}{5}$ b) $\frac{6}{5}$ c) $\frac{2}{5}$ d) $-\frac{6}{5}$

5. Let $3-i$ and $2+i$ be affixes of two points A and B the argand plane and P represents the complex number $z=x+iy$. Then, the locus of P if $|z-3+i|=|z-2-i|$ is

a) Circle on AB as diameter
b) The line AB
c) The perpendicular bisector of AB
d) None of these

6. If $x^2-2x\cos\theta+1=0$, then $x^{2n}-2x^n\cos n\theta+1$ is equal to

a) $\cos 2n\theta$ b) $\sin 2n\theta$ c) 0 d) None of these

7. Given $z=\frac{q+ir}{1+p}$, then $\frac{p+iq}{1+r}=\frac{1+iz}{1-iz}$ if

a) $p^2+q^2+r^2=1$ b) $p^2+q^2+r^2=2$ c) $p^2+q^2-r^2=1$ d) None of these

8. The expression $(1+i)^{n_1}+(1+i^3)^{n_2}$ is real iff

a) $n_1=-n_2$ b) $n_1=4r+(-1)^r n_2$ c) $n_1=2r+(-1)^r n_2$ d) None of these

9. If p,q,r are positive and are in AP, then roots of the quadratic equation $px^2+qx+r=0$ are complex for

a) $\left|\frac{r}{p}-7\right|\geq 4\sqrt{3}$ b) $\left|\frac{p}{r}-7\right|<4\sqrt{3}$ c) All p and r d) No p and r

10. If the roots of the equation $\frac{1}{x+p}+\frac{1}{x+q}=\frac{1}{r}$, $(x \neq -p, x \neq -q, r \neq 0)$ are equal in magnitude but opposite in sign, then $p+q$ is equal to

a) r b) $2r$ c) r^2 d) $\frac{1}{r}$

11. The solution set of the inequation $|2x-3| < |x+2|$, is

a) $(-\infty, 1/3)$ b) $(1/3, 5)$ c) $(5, \infty)$ d) $(-\infty, 1/3) \cup (5, \infty)$

12. In writing an equation of the form $ax^2+bx+c=0$; the coefficient of x is written incorrectly and roots are found to be equal. Again in writing the same equation the constant term is written incorrectly and it is found that one root is equal to those of the previous wrong equation while the other is double of it. If α and β be the roots of correct equation, then $(\alpha-\beta)^2$ is equal to

a) 5 b) $5\,\alpha\,\beta$ c) $-4\,\alpha\,\beta$ d) -4

13. If x is complex, the expression $\frac{x^2+34x-71}{x^2+2x-7}$ takes all which lie in the interval (a, b) where

a) $a=-1, b=1$ b) $a=1, b=-1$ c) $a=5, b=9$ d) $a=9, b=5$

14. Let a, b, c be real, if $ax^2+bx+c=0$ has two real roots α and β, where $\alpha < -2$ and $\beta > 2$, then

a) $4-\frac{2b}{a}+\frac{c}{a}<0$ b) $4+\frac{2b}{a}-\frac{c}{a}<0$ c) $4-\frac{2b}{a}+\frac{c}{a}=0$ d) $4+\frac{2b}{a}+\frac{c}{a}=0$

15. Two students while solving a quadratic equation in x, one copied the constant term incorrectly and got the roots 3 and 2. The other copied the constant term coefficient of x^2 correctly as -6 and 1 respectively the correct roots are

a) $3, -2$ b) $-3, 2$ c) $-6, -1$ d) $6, -1$

16. E_1:$a+b+c=0$, if l is a root of $ax^2+bx+c=0$, E_2:$b^2-a^2=2ac$, if $\sin\theta, \cos\theta$ are the roots of $ax^2+bx+c=0$.

Which of the following is true?

a) E_1 is true, E_2 is true b) E_1 is true, E_2 is false

c) E_1 is false E_2 is true d) E_1 is false, E_2 is false

17. If $\omega=\frac{-1+\sqrt{3}i}{2}$, then $(3+\omega+3\omega^2)^4$ is

a) 16 b) -16 c) 16ω d) $16\omega^2$

18. If $iz^3+z^2-z+i=0$, then $|z|$ is equal to

a) 1 b) i c) -1 d) $-i$

19. The least value of $|a|$ for which $\tan\theta$ and $\cot\theta$ are roots of the equation $x^2+ax+1=0$, is

a) 2 b) 1 c) 1/2 d) 0

20. If 1, 2, 3 and 4 are the roots of the equation $x^4+ax^3+bx^2+cx+d=0$, then $a+2b+c$ is equal to

a) -25 b) 0 c) 10 d) 24