DPP
DAILY PRACTICE PROBLEMS

CLASS : XIth
DATE :

Solutions

SUBJECT : MATHS
DPP NO. : 5

Topic :- COMPLEX NUMBERS AND QUADRATIC EQUATIONS

1. If $a+b+c=0$, then the roots of the equation $4ax^2+3bx+2c=0$ are
   a) Equal b) Imaginary c) Real d) None of these

2. For how many values of k, $x^2+x+1+2k\,(x^2-x-1)=0$ is a perfect square?
   a) 2 b) 0 c) 1 d) 3

3. The number of solutions of $\frac{\log 5+\log(x^2+1)}{\log(x-2)}=2$ is
   a) 2 b) 3 c) 1 d) None of these

4. The number of real roots of the equation $|x|^2-3|x|+2=0$ is
   a) 4 b) 3 c) 2 d) 1

5. If the difference between the roots of $x^2+ax+b=0$ and $x^2+bx+a=0$ is same and $a\neq b$, then
   a) $a+b+4=0$ b) $a+b-4=0$ c) $a-b-4=0$ d) $a-b+4=0$

6. The equation $\frac{3}{4}(\log_2 x)^2+\log_2 x-\frac{5}{4}=\log_x\sqrt{2}$ has
   a) At least one real solutions b) Exactly three real solutions
   c) Exactly one irrational solution d) Complex roots

7. If z_1,z_2,z_3 be three complex numbers such that $|z_1+1|\leq 1, |z_2+2|\leq 2$ and $|z_3+4|\leq 4$, then the maximum value of $|z_1|+|z_2|+|z_3|$ is
   a) 7 b) 10 c) 12 d) 14

8. If $\log_{\sqrt{3}}5=a$ and $\log_{\sqrt{3}}2=b$, then $\log_{\sqrt{3}}300$ is equal to
   a) 2(a + b) b) $2(a+b+1)$ c) $2(a+b+2)$ d) $a+b+4$

9. If p,q,r,s,t are numbers such that $p+q<r+s, q+r<s+t, r+s<t+p, s+t<p+q$, then the largest and smallest numbers are
   a) p and q respectively b) r and t respectively c) r and q respectively d) q and p respectively

10. The number of integral solutions of $\frac{x+2}{x^2+1} > \frac{1}{2}$ is

a) 4 b) 5 c) 3 d) None of these

11. Let α, β be the roots of the equation $x^2 - x + p = 0$ and γ, δ be the roots of $x^2 - 4x + q = 0$. If $\alpha, \beta, \gamma, \delta$ are in GP, then integral values of p, q are respectively

a) $-2, -32$ b) $-2, 3$ c) $-6, 3$ d) $-6, -32$

12. If the complex numbers z_1, z_2, z_3 satisfying $\frac{z_1 + z_3}{z_2 - z_3} = \frac{1 - i\sqrt{3}}{2}$, then triangle is

a) An equilateral triangle b) A right angled triangle
c) A acute angled triangle d) An obtuse angled isosceles triangle

13. If ω is a complex cube root of unity, then $225 + (3\omega + 8\omega^2)^2 + (3\omega^2 + 8\omega)^2$ is equal to

a) 72 b) 192 c) 200 d) 248

14. The locus of z satisying the inequality $\left|\frac{z + 2i}{2z + i}\right| < 1$ where $z = x + iy$, is

a) $x^2 + y^2 < 1$ b) $x^2 - y^2 < 1$ c) $x^2 + y^2 > 1$ d) $2x^2 + 3y^2 < 1$

15. If the roots of $x^3 - 12x^2 + 39x - 28 = 0$ are in A.P., then their common difference is

a) ± 1 b) ± 2 c) ± 3 d) ± 4

16. The solution set of the inequation $\frac{2}{|x-4|} > 1, x \neq 4$, is

a) (2, 6) b) $(2, 4) \cup (4, 6)$ c) $(-\infty, 2) \cup (6, \infty)$ d) None of these

17. The value of sum $\sum_{n=1}^{13} (i^n + i^{n+1})$, where $i = \sqrt{-1}$, equals

a) i b) $i - 1$ c) $-i$ d) 0

18. If α and β are imaginary cube roots of unity, then $\alpha^4 + \beta^4 + \frac{1}{\alpha\beta}$ is equal to

a) 3 b) 0 c) 1 d) 2

19. If a, b, c are all positive and in H.P., then the roots of $ax^2 + 2bx + c = 0$ are

a) Real b) Imaginary c) Rational d) Equal

20. For all complex numbers z_1, z_2 satisfying $|z_1| = 12$ and $|z_2 - 3 - 4i| = 5$, the minimum value of $|z_1 - z_2|$ is

a) 4 b) 3 c) 1 d) 2