Quadratic equation dpp (back log course)

1. If p, q, r are three distinct real numbers $p \neq 0$ such that $x^2 + qx + pr = 0$ and $x^2 + rx + pq = 0$ have a common root, then the value of $p + q + r$ is
(a) 0 (b) 1 (c) -1 (d) 2

2. The equation $x^2 + ax - a^2 - 1 = 0$ will have roots of opposite signs if :
(a) $a \in (-\infty, \infty)$ (b) $a \in [-1, 1]$
(c) $a \in (-\infty, -1) \cup (1, \infty)$ (d) None of these

3. If $8, 2$ are the roots of $x^2 + ax + \beta = 0,$ and $3, 3$ are the roots of $x^2 + \alpha x + b = 0$ then the roots of $x^2 + ax + b = 0$ are :
(a) $8, -1$ (b) $-9, 2$ (c) $-8, -2$ (d) $9, 1$

4. If α, β, γ are the roots of $x^3 - px - q = 0,$ then the value $(2\alpha + \beta + \gamma)(2\beta + \gamma + \alpha)(2\gamma + \alpha + \beta)$ is
(a) q (b) $-q$ (c) p (d) $-p$

5. The integral value of a for which $ax^2 + ax + a = 2x^2 - 3x - 6$ has equal roots is
(a) 3 (b) 2 (c) -3 (d) -2

6. If $x^2 + 3x + 5 = 0$ and $ax^2 + bx + c = 0$ have a common root and $a, b, c \in \mathbf{N}$ then minimum value of $a + b + c$ is equal to :
(a) 3 (b) 9 (c) 6 (d) 12

7. The value of λ for which $2x^2 - 2(2\lambda + 1)x + \lambda(\lambda + 1) = 0$ may have one root less than λ and other root greater than λ are given by
(a) $1 > \lambda > 0$ (b) $-1 < \lambda < 0$ (c) $\lambda \geq 0$ (d) $\lambda > 0$ or $\lambda < -1$

8. Real roots of equation $x^2 + 3|x| + 2 = 0$ are
(a) $-1, -4$ (b) $1, 4$ (c) $-4, 4$ (d) None of these

9. If $\alpha + \beta = 3$ and $\alpha^3 + \beta^3 = 7,$ then α and β are the roots of
(a) $3x^2 + 9x + 7 = 0$ (b) $9x^2 - 27x + 20 = 0$ (c) $2x^2 - 6x + 15 = 0$ (d) None of these

10. If a, b, c are odd integers and $ax^2 + bx + c = 0,$ has real roots then :
(a) Both roots are rational (b) Both roots are irrational
(c) Both roots are positive (d) Roots are of opposite signs

11. The least integer k which makes the roots of the equation $x^2 + 5x + k = 0$ imaginary is
(a) 4 (b) 5 (c) 6 (d) 7

12. If the difference between the corresponding 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) $a - b + 4 = 0$

13. If α, β are roots of $x^2 - 3x + a = 0$ and γ, δ be those of $x^2 - 12x + b = 0$ and numbers $\alpha, \beta, \gamma, \delta$ (in order) from an increasing G. P. then

(a) $a=3, b=12$ (b) $a=12, b=3$ (c) $a=2, b=32$ (d) $a=4, b=16$

14. Let $r=\cos\frac{2\pi}{7}+i\sin\frac{2\pi}{7}$, $\alpha=r+r^2+r^4$, $\beta=r^3+r^5+r^6$. Then α and β are the roots of the equation :

(a) $x^2-x+4=0$ (b) $x^2-x+2=0$ (c) $x^2+x+2=0$ (d) $x^2+x-2=0$

15. Solution of the equation $x+\frac{x}{x-1}=1+\frac{x}{x-1}$ are

(a) 0, 1 (b) 0 (c) 1 (d) None of these

16. Let α and β be the roots of the equation $x^2+x+1=0$. The equation whose roots are α^{19}, β^7 is

(a) $x^2-x-1=0$ (b) $x^2-x+1=0$ (c) $x^2+x-1=0$ (d) $x^2+x+1=0$

17. If α, β are the roots of the equation $x^2+2x+4=0$, then $\frac{1}{\alpha^3}+\frac{1}{\beta^3}$ is equal to

(a) $\frac{1}{4}$ (b) 4 (c) 32 (d) $\frac{1}{32}$

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

(a) ±1 (b) ±2 (c) ±3 (d) ±4

19. If the equation $x^2+px+q=0$ has roots u and v, where p, q are non-zero constant. Then

(a) $qx^2+px+1=0$ has roots $\frac{1}{u}$ and $\frac{1}{v}$ (b) $(x-p)(x+q)=0$ has roots $u+v$ and uv

(c) $x^2+p^2x+q^2=0$ has roots u^2 and v^2 (d) $x^2+qx+p=0$ has roots $\frac{u}{v}$ and $\frac{v}{u}$

20. If α, β are the roots of $x^2+px+1=0$ and γ, δ be those of $x^2+qx+1=0$ then the value of $(\alpha-\gamma)(\beta-\gamma)(\alpha+\delta)(\beta+\delta)$ is equal to

(a) p^2-q^2 (b) q^2-p^2 (c) p^2 (d) q^2

21. If 2 lies between the roots of quadratic equation $x^2-ax+a=0$, then :

(a) $0<a<4$ (b) $a<4$ (c) $a>4$ (d) None

22. The value of k for which the equation $x^3+x^2-4x-k=0$ and $x^2+x-2=0$ have a common root is

(a) 2 (b) 4 (c) -4 (d) 6

23. If the equation $x^3+ax^2+bx-4=0$ has two roots equal to 2, then the ordered pair (a, b) is

(a) $(-5, 8)$ (b) $(5, -8)$ (c) $(1, 1)$ (d) $(2, 2)$

24. The number of roots of the equation $\log(-2x) = 2\log(x+1)$ is

(a) 0 (b) One (c) Two (d) More than two

25. The value of 'a' for which the roots of the equation $x^2 + x + a = 0$ are real and exceed 'a' are :

(a) $0 < a < 1/4$ (b) $a < 1/4$ (c) $a < -2$ (d) $-2 < a < 0$

1. (a)	2. (a)	3. (d)	4. (a)	5. (a)
6. (b)	7. (d)	8. (d)	9. (b)	10. (b)
11. (d)	12. (a)	13. (c)	14. (c)	15. (d)
16. (d)	17. (a)	18. (c)	19. (a)	20. (b)
21. (c)	22. (b)	23. (a)	24. (b)	25. (c)