

1. If, $(a + 1)x^2 + 2(a+1)x + (a - 2) = 0$, then, for what parameter of 'a' the given equation have real and distinct roots?

- a) $(-\infty, \infty)$
- b) $(-1, \infty)$
- c) $[-1, \infty)$
- d) $(-1, 1)$

2. If, $(a + 1)x^2 + 2(a+1)x + (a - 2) = 0$, then, for what parameter of 'a' the given equation have equal roots?

- a) $(-\infty, -1)$
- b) $[-1, \infty)$
- c) $(0, 1)$
- d) Not possible

3. If, $(a + 1)x^2 + 2(a+1)x + (a - 2) = 0$, then, for what parameter of 'a' the given equation have imaginary roots?

- a) $(-\infty, -1)$
- b) $(-1, \infty)$
- c) $(-1, 1)$
- d) $(-\infty, \infty)$

4. If x_1, x_2 are real roots of $ax^2 - x + a = 0$. Then, find the set of all values of parameter 'a' for which $|x_1 - x_2| < 1$?

- a) $(1 - 5a)/a^2 < 0$
- b) $(1 - 5a)/a^2 = 0$
- c) $(1 - 5a)/a^2 > 0$
- d) $(1 - 5a)/a < 0$

5. What is the value of x if $(a + 2b - 3c)x^2 + (b + 2c - 3a)x + (c + 2a - 3b) = 0$ where a, b, c are in A.P?

- a) $1/2$
- b) $1/4$
- c) $2/3$
- d) $3/4$

6. What will be the value of f(x) if, 2A, A + B, C are integers and $f(x) = Ax^2 + Bx + C = 0$?

- a) Natural Number
- b) Unpredictable
- c) Integer
- d) Complex Number

7. What will be the sum of the real roots of the equation $x^2 + 5|x| + 6 = 0$?

- a) Equal to 5
- b) Equal to 10
- c) Equal to -5
- d) Does not exist

8. What is the number of solution(s) of the equation $|\sqrt{x - 2}| + \sqrt{x(\sqrt{x - 4})} + 2 = 0$?

- a) 2
- b) 4
- c) No solution
- d) Infinitely many solutions

9. Which is the largest negative integer which satisfies $(x^2 - 1)/(x - 2)(x - 3)$?

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

10. Which one is the complete set of values of x satisfying $\log_{x^2} (x + 1) > 0$?

- a) $(1, \infty)$
- b) $(-1, 0) - \{0\}$
- c) $(-1, 1) - \{0\}$
- d) $(-1, 0) \cup (1, \infty)$

11. What is the set of values of p for which the roots of the equation $3x^2 + 2x + p(p - 1) = 0$ are of opposite sign?

- a) $(-\infty, 0)$
- b) $(0, 1)$
- c) $(1, \infty)$
- d) $(0, \infty)$

12. For what value of θ , 1 lies between the roots of the quadratic equation $3x^2 - 3\sin\theta x - 2\cos^2\theta = 0$?

- a) $2n\pi + \pi/6 < \theta < 2n\pi + 5\pi/6$
- b) $2n\pi + \pi/3 < \theta < 2n\pi + 5\pi/3$
- c) $2n\pi + \pi/6 \leq \theta \leq 2n\pi + 5\pi/6$
- d) $2n\pi + \pi/3 \leq \theta \leq 2n\pi + 5\pi/3$

13. A real number 'a' is called a good number if the inequality $(2x^2 - 2x - 3) / (x^2 + x + 1) \leq a$ is satisfied for all real x . What is the set of all real numbers?

- a) $(-\infty, 10/3]$
- b) $(10/3, \infty)$
- c) $[10/3, \infty)$
- d) $[-10/3, \infty)$

14. Let S denotes the set of all real values of the parameter 'a' for which every solution of the inequality $\log_{1/2} x^2 \geq \log_{1/2} (x + 2)$ is the solution of the inequality $49x^2 - 4a^4 \leq 0$. What is the value of S ?

- a) $(-\infty, -\sqrt{7}) \cup (\sqrt{7}, \infty)$
- b) $(-\infty, -\sqrt{7}] \cup [\sqrt{7}, \infty)$
- c) $(-\sqrt{7}, \sqrt{7})$
- d) $[-\sqrt{7}, \sqrt{7}]$

15. If, $x^4 + 4x^3 + 6ax^2 + 6bx + c$ is divisible by $x^3 + 3x^2 + 9x + 3$. Then, what is the value of $a + b + c$?

- a) 4
- b) 6
- c) 7
- d) 10

16. Roots of a quadratic equation are real when discriminant is _____

- a) zero
- b) greater than zero

- c) less than zero
- d) greater than or equal to zero

17. Roots of a quadratic equation are imaginary when discriminant is _____

- a) zero
- b) greater than zero
- c) less than zero
- d) greater than or equal to zero

18. Solve $x^2+1 = 0$.

- a) $x=1, -1$
- b) $x=i, -i$
- c) $x=-1$
- d) $x=i$

19. Solve $2x^2 + x + 1 = 0$.

- a) $-1 \pm i\sqrt{4}$
- b) $1 \pm i\sqrt{4}$
- c) $1 \pm \sqrt{4}$
- d) $-1 \pm \sqrt{4}$

20. Solve $-x^2 + x - 2 = 0$.

- a) $-1 \pm i\sqrt{2}$
- b) $1 \pm i\sqrt{2}$
- c) $1 \pm \sqrt{2}$
- d) $-1 \pm \sqrt{2}$

ANSWERS-

- 1. **b**
- 2. **d**
- 3. **a**
- 4. **c**
- 5. **b**
- 6. **b**
- 7. **d**
- 8. **a**
- 9. **a**
- 10. **d**
- 11. **b**
- 12. **a**
- 13. **a**
- 14. **d**

15. **d**

16. **d**

17. **c**

18. **b**

19. **a**

20. **d**