

## 5. QUADRATIC EQUATIONS

1. The sum of a number and its reciprocal is  $50/7$ , then the number is \_\_\_\_\_
2. The roots of the equation  $3x^2 - 2\sqrt{6}x + 2 = 0$  are \_\_\_\_\_
3. If  $x^2 - 2x + 1 = 0$ , then  $x + 1/x =$  \_\_\_\_\_
4. If 3 is a solution of  $3x^2 + (k-1)x + 9 = 0$ , then  $k =$  \_\_\_\_\_
5. The roots of  $x^2 - 2x - (r^2 - 1) = 0$  are \_\_\_\_\_
6. The sum of the roots of the equation  $3x^2 - 7x + 11 = 0$  is \_\_\_\_\_
7. The roots of the equation  $\frac{x^2 - 8}{x^2 + 20} = \frac{1}{2}$  are \_\_\_\_\_
8. The roots of the quadratic equation  $\frac{9}{x^2 - 27} = \frac{25}{x^2 - 11}$  are \_\_\_\_\_
9. The roots of the equation  $\sqrt{2x^2 + 9} = 9$  are \_\_\_\_\_
10. The two roots of a quadratic equation are 2 and -1. The equation is \_\_\_\_\_
11. If the sum of a quadratic equation  $3x^2 + (2k+1)x - (k+5) = 0$ , is equal to the product of the roots, then the value of  $k$  is \_\_\_\_\_
12. The value of  $k$  for which 3 is a root of the equation  $kx^2 - 7x + 3 = 0$  is \_\_\_\_\_
13. If the difference of the roots of the quadratic equation  $x^2 - ax + b$  is 1, then \_\_\_\_\_
14. The quadratic equation whose one root is  $2 - \sqrt{3}$  is \_\_\_\_\_
15. \_\_\_\_\_ is the condition that one root of the quadratic equation  $ax^2 + bx + c$  is reciprocal of the other.
16. The roots of the quadratic equation  $x/p = p/x$  are \_\_\_\_\_
17. If the roots of the equation  $12x^2 + mx + 5 = 0$  are real and equal then  $m$  is equal to \_\_\_\_\_
18. If the equation  $x^2 - 4x + a$  has no real roots, then \_\_\_\_\_

19. The discrimination of the quadratic equation  $7\sqrt{3}x^2+10x-\sqrt{3}=0$  is \_\_\_\_\_
20. The value of  $\sqrt{6+\sqrt{6+\sqrt{6+\dots}}}$  is \_\_\_\_\_
21. Standard form of a quadratic equation is \_\_\_\_\_
22. The sum of a number and its reciprocal is  $5/2$ . This is represented as \_\_\_\_\_
23. “The sum of the squares of two consecutive natural numbers is 25”, is represented as \_\_\_\_\_
24. If one root of a quadratic equation is  $7-\sqrt{3}$  then the other root is \_\_\_\_\_
25. The discriminant of  $5x^2-3x-2 = 0$  is \_\_\_\_\_
26. The roots of the quadratic equation  $x^2-5x+6 = 0$  are \_\_\_\_\_
27. If  $x = 1$  is a common root of the equations  $ax^2+ax+3 = 0$  and  $x^2+x+b = 0$  then the value of  $ab$  is \_\_\_\_\_
28. If the discriminant of the quadratic equation  $ax^2+bx+c = 0$  is zero, then the roots of the equation are \_\_\_\_\_
29. The product of the roots of the quadratic equation  $\sqrt{2}x^2-3x+5\sqrt{2}=0$  is \_\_\_\_\_
30. The nature of the roots of a quadratic equation  $4x^2-12x+9 = 0$  is \_\_\_\_\_
31. If the equation  $x^2-bx+1 = 0$  does not possess real roots, then \_\_\_\_\_
32. If the sum of the roots of the equation  $x^2-(k+6)x+2(2k-1) = 0$  is equal to half of their product, then  $k =$  \_\_\_\_\_
33. If one root of the equation  $4x^2-2x+(\lambda-4) = 0$  be the reciprocal of the other, then  $\lambda =$  \_\_\_\_\_
34. If  $\sin\alpha$  and  $\cos\alpha$  are the roots of the equation  $ax^2+bx+c = 0$ , then  $b^2 =$  \_\_\_\_\_
35. If the roots of the equation  $(a^2+b^2)x^2-2b(a+c)x+(b^2+c^2) = 0$  are equal, then  $b^2 =$  \_\_\_\_\_
36. The quadratic equation whose roots are  $-3, -4$  is \_\_\_\_\_

37. If  $b^2-4ac < 0$  then the roots of quadratic equation  $ax^2+bx+c = 0$  are

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## ANSWERS

- 1)  $1/7$ ; 2)  $\sqrt{2/3}, \sqrt{2/3}$ ; 3) 2; 4)  $-11$ ;  
5)  $1-r, r+1$ ; 6)  $7/3$ ; 7)  $\pm 6$ ; 8)  $\pm 6$ ; 9)  $x = \pm 6$ ; 10)  $x^2-x-2 = 0$ ; 11) 4;  
12) 2;  
13)  $a^2-4b = 1$ ; 14)  $x^2-4x+1 = 0$ ; 15)  $a = c$ ; 16)  $\pm p$ ; 17)  $4\sqrt{15}$ ;  
18)  $a > 4$ ; 19) 184;  
20) 3; 21)  $ax^2+bx+c = 0, a \neq 0$ ; 22)  $(x+1/x = 5/2)$ ; 23)  $x^2+(x-1)^2 = 25$ ;  
24)  $7+\sqrt{3}$ ; 25) 49; 26) 2, 3; 27) 3; 28) real and equal; 29) 5;  
30) real and equal; 31)  $b^2-4 < 0$  (or)  $b^2 < 4$  (or)  $-2 < b < 2$ ; 32) 7; 33) 8;  
34)  $a^2+2ac$ ; 35)  $ac$ ; 36)  $x^2+7x+12 = 0$ ;  
37) Not real or imaginary.