QUADRATIC EQUATIONS

- 1. Which of the following equations have sum of its roots as 3? a) $x^2 + 3x - 5 = 0$ b) $-x^2 + 3x + 3 = 0$ c) $\sqrt{2x^2 - \frac{3}{\sqrt{2}}x - 1} = 0$ d) $3x^2 - 3x - 3 = 0$. 2. The roots of $9p^2x^2 - 12pqrx + 4q^2r^2 = 0$ are: a) real and equal b) real and distinct c) not real d) none of these 3. The roots of $\sqrt{3p^2} + 10p + 7\sqrt{3}$ are: The roots of $\sqrt{3}p + 10p + 7\sqrt{3}$ me. a) $-\sqrt{3}$ and $7\sqrt{3}$ b) $\sqrt{3}$ and $-\frac{7}{\sqrt{3}}$ c) $-\sqrt{3}$ and $-\frac{7}{\sqrt{3}}$ d) $-\sqrt{3}$ and $-7\sqrt{3}$ 4. If the equation of $x^2 - bx + 1 = 0$ does not have real roots then: a) b>2 b) b<-2 c) -2 < b < 2 d) b=25. The quadratic equation $2(p+q)^2x^2 + 2(p+q)x + 1 = 0$ has : a) b>2 b) b<-2 c) -2 < b < 2 d) b = 2 b) no real roots c) real and distinct d) none of these a) Equal roots 6. $(x+2)^3 = x(x^2 - 1)$ is a : a) biquadratic equation b) cubic equation c) quadratic equation d) linear equation 7. The quadratic equations with real and equal roots is: a) $2x^2 - 5x + 7 = 0$ b) $x^2 - 3\sqrt{2x} + 4 = 0$ c) $\sqrt{3x^2} - 2\sqrt{2x} + \sqrt{3} = 0$ d) $x^2 - 3x + 9 = 0$ 8. The roots of the equation $3a^2x^2 + 8abx + 4b^2 = 0$ are : a) $\frac{2b}{a}$, $\frac{-b}{a}$ b) $\frac{2b}{3a}$, $\frac{-b}{a}$ c) $\frac{2b}{a}$, $\frac{-2b}{a}$ d) $\frac{-2b}{a}$, $\frac{-2b}{3a}$ 9. If the quadratic equation $abx^2 + (b^2 - ac)x - bc = 0$ has equal roots then: a) $b^2 = ac$ b) b = c c) $b^2 = -ac$ d) ab = c10. If the quadratic equation $2x^2 - kx + 3 = 0$ has equal roots then the value of k is : a) ± 5 b) $\pm \sqrt{6}$ c) $\pm 2\sqrt{6}$ d) $\pm 3\sqrt{2}$ 11. If x = 2 is a root of the quadratic equation $3x^2 - 2kx + 5 = 0$, the k is : a) $\frac{4}{17}$ b) $\frac{17}{4}$ c) $\frac{1}{17}$ d) $\frac{1}{4}$ 12. Discriminant of $x^2 + px + q = 0$ is, a) p = 8q b) $p^2 = 8q$ c) $p^2 - 8q$ d) $q^2 - 8p$ 13. Value of k for which the quadratic equation $2x^2 - kx + k = 0$ has equal roots is : a) 0 only b) 4 c) 8 only d) 0, 8 14. Find the roots of the following equation: $\frac{2}{r}x^2 - x - \frac{3}{r} = 0$ 15. Is it possible to design a rectangular mango grove whose length is twice its breadth and the area is 800 m^2 ? If so find its length and breadth. 16. Using quadratic formula, solve the following: $x^2 - 4ax + 4a^2 - b^2 = 0$
 - 17. Check whether $x^3 4x^2 + 1 = (x 2)^3$ is a quadratic equation or not. Justify your answer.
 - 18. Find k if $2x^2 + kx + 3 = 0$ have two equal roots.

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- 19. If in a quadratic equation the coefficient of x is zero, then the quadratic equation has no real roots. TRUE or FALSE. Justify.
- 20. Solve: $\frac{1}{2x-3} + \frac{1}{x-5} = 1$; $x \neq \frac{3}{2}$, 5
- 21. A natural number when increased by 12 becomes equal to 160 times its reciprocal. Find the number.
- 22. Find the whole number which when decreased by 20 is equal to 69 times the reciprocal of the number
- 23. Determine the positive value of k for which both the equations $x^2 + kx + 64 = 0$ and $x^2 8x + k = 0$ will have equal roots
- 24. If the roots of the equation $(b-c)x^2 + (c-a)x + (a-b) = 0$ are equal, then prove that 2b = a + c.
- 25. Solve: $\frac{1}{x+1} + \frac{2}{x+2} = \frac{4}{x+4}$, $x \neq 1, -2, -4$
- 26. Solve: $\frac{1}{a+b+x} = \frac{1}{a} + \frac{1}{b} + \frac{1}{x}$, $x \neq 0, -(a+b)$
- 27. Solve: $2\left(\frac{2x+3}{x-3}\right) 25\left(\frac{x-3}{2x+3}\right) = 5$ given that $x \neq 3$, $\frac{-3}{2}$
- 28. Solve for x using Quadratic formula : $abx^2 + (b^2 ac) x bc = 0$.
- 29. The difference of the squares of two numbers is 45. The square of the smaller number is 4 times the larger number. Find the numbers.
- 30. A train travels at a certain average speed for a distance of 63km and then travels a distance of 72km at an average speed of 6km?hr more than its original speed. If it takes 3 hrs to complete the total journey, what is the average original speed?
- 31. Find two consecutive odd positive integers, sum of whose squares is 290.
- 32. A train covers a distance of 90km at a uniform speed. Had the speed been 15km/hr more, it would have taken 30 minutes less for the journey. Find the original speed of the train.
- 33. There are three consecutive positive integers such that the sum of square of the first and .the product of the other two is 154. What are the integers?
- 34. Two trains leave a railway station at the same time. The first train travels due west and the second train due north. The first train travels at 5km /hr faster than the second train. If after two hours they are 50km apart, find the average speed of each train.
- 35. The age of the father is twice the square of the age of his son. Eight years hence the age of father will be 4 years more than three times the age of his son. Find their present ages.