

1. If the equation $kx^2 - 2kx + 6 = 0$ has equal roots, find the value of k .
2. Find the roots of the equation $ax^2 + a = a^2x + x$
3. Solve for x : $4\sqrt{3}x^2 + 5x - 2\sqrt{3} = 0$
4. A train takes 2 hours less for a journey of 300 km if its speed is increased by 5 km/h from its usual speed. Find the usual speed of the train.
5. A shopkeeper buys a number of books for Rs. 1200. If he had bought 10 more books for the same amount, each book would have cost him Rs. 20 less. How many books did he buy?
6. Find the roots of the following quadratic equation: $x^2 - \frac{x}{5} + \frac{1}{100} = 0$
7. Find the roots of the equation $x^2 - 2(a^2 + b^2)x + (a^2 - b^2)^2 = 0$
8. Divide 29 into two parts so that the sum of the squares of the two parts is 425.
9. A motorboat whose speed is 18 km/h in still water takes 1 hour more to go 24 km upstream than to return downstream to the same spot. Find the speed of the stream.