

Q1. If  $a$  and  $b$  are the roots of the equation  $x^2 + ax - b = 0$ , then find  $a$  and  $b$ .

Q2. If the roots of the quadratic equation  $(a - b)x^2 + (b - c)x + (c - a) = 0$  are equal, prove that  $2a = b + c$ .

Q3. If the equation  $(1 + m^2)x^2 + 2mcx + c^2 - a^2 = 0$  has equal roots, show that  $c^2 = a^2(1 + m^2)$ .

Q4. If the roots of the equation  $(c - ab)x^2 - 2(a^2 - bc)x + b^2 - ac = 0$  in  $x$  are equal, then show that either  $a = 0$  or  $a^3 + b^3 + c^3 = 3abc$ .

Q5. Using quadratic formula, solve the following equation for  $x$ :

$$abx^2 + (b^2 - ac)x - bc = 0$$

Q6. If 1 is a root of the equations  $ay^2 + ay + 3 = 0$  and  $y^2 + y + b = 0$ , then find the value of  $ab$ .

Q7. Find the roots of  $4x^2 + 3x + 5 = 0$  by the method of completing the squares.

Q8. Solve for  $x$ :

$$36x^2 - 12ax + (a^2 - b^2) = 0$$

Q9. Using quadratic formula, solve for  $x$ :  $9x^2 - 9(a + b)x + (2a^2 + 5ab + 2b^2) = 0$

Q10. In a cricket match, Kapil took one wicket less than twice the number of wickets taken by Ravi. If the product of the numbers of wickets taken by these two is 15, find the number of wickets taken by each.