

1. Nature of graph \_\_\_\_\_ when coefficient of  $x^2$  is negative.
2.  $n$ th term of an AP is  $5n + 1$ .
3.  $b^2 - 4ac > 0$  for certain quadratic equation. Write the nature of roots of that equation.
4. Prove that  $\sqrt{2}$  is irrational.
5. For what value of  $n$ , are the  $n$ th terms of two APs: 63, 65, 67... and 3, 10, 17,... equal?
6. Determine the AP whose 3<sup>rd</sup> term is 5 and the 7<sup>th</sup> term is 9.
7. How many 2 digit numbers are divisible by 3?
8. Find the discriminant of the equation  $3x^2 - 2x + 1/3 = 0$  and hence find the nature of its roots. Find them if they are real.
9. Find the roots of
 
$$\frac{1}{x+4} - \frac{1}{x-7} = \frac{11}{30} \quad x \neq -4, 7$$
10. A motor boat whose speed is 18kph in still water takes 1 hour more to go 24km upstream than to return downstream to the same spot. Find the speed of the stream.
11. Find the roots of given quadratic equation by completing the square.
 
$$2x^2 - 2\sqrt{2}x + 1 = 0$$
12. Find the roots of quadratic equation  $2x^2 - 5x + 3 = 0$  by using quadratic formula.
13. Divide  $2x^2 + 3x + 1$  by  $x + 2$
14. Find quadratic polynomial if sum, product of its zeros are  $\frac{1}{4}$ , -1
15. Find the zeroes of the polynomial  $x^2 - 3$  and verify the relationship between the zeros and the coefficients.
16. Find the quadratic polynomial, the sum and product of whose zeroes are -3 and 2 respectively.
17. Find HCF of 96 and 404 by the prime factorisation method. Hence find their LCM.
18. Use Euclid's division lemma to show that the cube of any positive integer is of the form.
 
$$9m, 9m + 1 \text{ or } 9m + 8$$
19. Solve
 
$$\frac{1}{3x+y} + \frac{1}{3x-y} = \frac{3}{4}$$

$$\frac{1}{2(3x+y)} - \frac{1}{2(3x-y)} = \frac{-1}{8}$$
20. Find  $a, b$  when the linear equations
 
$$2x + 3y = 7, \quad (a-b)x + (a+b)y = 3a + b - 2$$
 Have infinite number of solutions?