

**Important Questions for MP Class 11 Maths**

1. Prove that  $i^5 + i^6 + i^7 + i^8 = 0$ .
2. Calculate the value of a and b when:
  - (i)  $(3, b) = (a, -1)$
  - (ii)  $(0, 2) = (a - 3, b + 5)$
3. Simplify  $\sqrt{4} \times (1 - \sqrt{-64})$ .
4. Find the modulus of  $(4 - 3i) - (3 + 4i)$ .
5. Express  $\cos 2\theta$  and  $\sin 2\theta$  in terms of  $\sin \theta$  and  $\cos \theta$ .
6. If roots of the equation  $ax^2 + cx + c = 0$  are in the ratio of p:q show that
 
$$\sqrt{\frac{p}{q}} + \sqrt{\frac{q}{p}} + \sqrt{\frac{c}{a}} = 0.$$
7. If the fifth and seventeenth term of an A.P. be 7 and 25 then find its 13th term.
8. Prove that the points A (a, b + c), B (b, c + a) and C (c, a + b) are collinear.
9. Write definition of non-singular and scalar matrix.
10. For a matrix A of order  $2 \times 2$   $(\text{adj } A) =$  then
  - (a) 0
  - (b) 10
  - (c) 20
  - (d) 100
11. If  $A =$  then prove that  $AA'$  and  $A'A$  are symmetric matrix, but  $AA' \neq A'A$ .
12. OPQR is a square and M, N are the middle points of the sides PQ and QR respectively then the ratio of the areas of the square and triangle OMN is \_\_\_\_\_
13. The formula for Distance between two points is?
14. Find the coordinate of in centre of triangle whose vertices are (2, -2), (8, -2) and (8, 6).
15. Find the equation of the straight line which has equal intercept on both the axis and form a triangle of area 8 sq. unit.
16. Find the distance between the straight lines  $y = 5x - 7$  and  $y = 5x + 6$

17. Write the equation of Hyperbola.
18. Derive the equation of Parabola in standard form.
19. Prove that  $\tan(A+30) + \cot(A-30) =$
20. Sketch the graph of  $y = \sec 2x$
21. Two places are due west of a leaning tower, which leans towards east are at a distance of "a" and "b" from its foot, if q and f are the elevations of the top of tower from these places. Prove that inclination to the horizontal is given by

$$\cot a =$$

22. For this distribution, find the mean, median and mode.

Salary (Rs.)	1000	1500	2000	25000	3000	3500
No. of employees	26	28	18	39	3	5

23. How many straight lines can be obtained by joining 12 points out of which 5 points are collinear? Also find that from these points how many triangles can be formed.
24. A man has two machines by which he can make either bottles or tumbler. To make bottles he has to run first machine for one minute and second for 2 minutes. To make tumbler he has to run each machine for one minute. 1st machine cannot be used for more than 50 minutes while other is for 54 minutes, he earns profit of 10 paise per bottle and 6 paise per tumbler. Assuming that he can sell all the items that he produces. Make mathematical model for number of items for the maximum benefit.