

# Mathematics Class X

## Mock Paper 1 (2026)

Time Allowed: 3 hours

Maximum Marks: 80

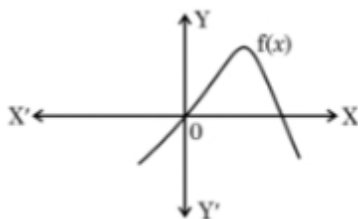
### General Instructions:

Read the following instructions carefully and follow them:

1. This question paper contains 38 questions.
2. This Question Paper is divided into 5 Sections A, B, C, D and E.
3. In Section A, Questions no. 1-18 are multiple choice questions (MCQs) and questions no. 19 and 20 are Assertion-Reason based questions of 1 mark each.
4. In Section B, Questions no. 21-25 are very short answer (VSA) type questions, carrying 02 marks each.
5. In Section C, Questions no. 26-31 are short answer (SA) type questions, carrying 03 marks each.
6. In Section D, Questions no. 32-35 are long answer (LA) type questions, carrying 05 marks each.
7. In Section E, Questions no. 36-38 are case study-based questions carrying 4 marks each with sub-parts of the values of 1, 1 and 2 marks each respectively.
8. All Questions are compulsory. However, an internal choice in 2 Questions of Section B, 2 Questions of Section C and 2 Questions of Section D has been provided. An internal choice has been provided in all the 2 marks questions of Section E.
9. Draw neat and clean figures wherever required.
10. Take  $\pi = 22/7$  wherever required if not stated.
11. Use of calculators is not allowed.

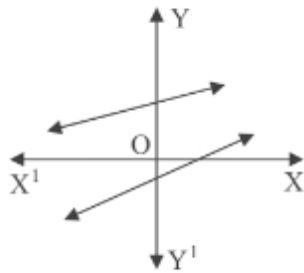
### Section A

1. The product of a rational number and an irrational number is [1]  
a) a rational number only                      b) an integer  
c) an irrational number only                      d) both rational and irrational number
2. In the given figure, graph of a polynomial  $f(x)$  is shown. The number of zeroes of polynomial  $f(x)$  is: [1]



- a) 0                      b) 2  
c) 1                      d) 3

3. In the given figure, graphs of two linear equations are shown. The pair of these linear equations is: [1]



- a) consistent with infinitely many solutions.      b) inconsistent but can be made consistent by extending these lines.  
c) consistent with unique solution.      d) inconsistent.

4. The root(s) of the quadratic equation  $x^2 - 25 = 0$  is/are: [1]

- a) -25, 25      b) -5, 5  
c) 25      d) 5

5. In an A.P., if  $d = -4$ ,  $n = 7$  and  $a_n = 4$ , then 'a' is [1]

- a) 28      b) 6  
c) 20      d) 7

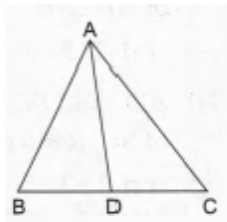
6. The distance between the points  $(\sin\theta, \cos\theta)$  and  $(\cos\theta, -\sin\theta)$  is [1]

- a)  $\sqrt{2}$  units      b)  $\sqrt{\sin\theta + \cos\theta}$  units  
c)  $2\sqrt{2}$  units      d) 2 units

7. The perpendicular bisector of the line segment joining the points A (1, 5) and B (4, 6) cuts the y-axis at [1]

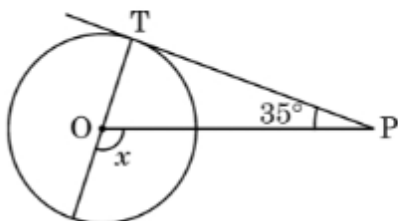
- a) (0, 12)      b) (0, 13)  
c) (13, 0)      d) (0, -13)

8. In  $\triangle ABC$  it is given that  $\frac{AB}{AC} = \frac{BD}{DC}$ . If  $\angle B = 70^\circ$  and  $\angle C = 50^\circ$  then  $\angle BAD = ?$  [1]



- a)  $40^\circ$       b)  $30^\circ$   
c)  $50^\circ$       d)  $45^\circ$

9. In the given figure, if PT is a tangent to a circle with centre O and  $\angle TPO = 35^\circ$ , then the measure of  $\angle x$  is: [1]



- a)  $115^\circ$       b)  $120^\circ$   
c)  $125^\circ$       d)  $110^\circ$

10. Two circles of radii 10 cm and 8 cm intersect each other and the length of common chord is 12 cm. The distance between their centres is \_\_\_\_\_.  
a)  $4\sqrt{7}$  cm  
b)  $3\sqrt{7}$  cm  
c)  $\sqrt{7}$  cm  
d)  $(8 + 2\sqrt{7})$  cm
11. If  $\sin x + \sin^2 x = 1$ , then  $\cos^8 x + 2\cos^6 x + \cos^4 x =$  \_\_\_\_\_.  
a) -1  
b) 2  
c) 0  
d) 1
12.  $\cos^4 A - \sin^4 A$  is equal to  
a)  $2 \sin^2 A + 1$   
b)  $2 \cos^2 A + 1$   
c)  $2 \sin^2 A - 1$   
d)  $2 \cos^2 A - 1$
13. A plane is observed to be approaching the airport. It is at a distance of 12 km from the point of observation and makes an angle of elevation of  $30^\circ$  there at. Its height above the ground is  
a) 10 km  
b) 8 km  
c) 12 km  
d) 6 km
14. The area of the sector of a circle of radius 12 cm is  $60\pi \text{ cm}^2$ . The central angle of this sector is:  
a)  $6^\circ$   
b)  $150^\circ$   
c)  $75^\circ$   
d)  $120^\circ$
15. The difference of the areas of a minor sector of angle  $120^\circ$  and its corresponding major sector of a circle of radius 21 cm, is  
a)  $346.5 \text{ cm}^2$   
b)  $231 \text{ cm}^2$   
c)  $462 \text{ cm}^2$   
d)  $693 \text{ cm}^2$
16. One card is drawn at random from a well shuffled deck of 52 playing cards. The probability that it is a red king is:  
a)  $\frac{1}{26}$   
b)  $\frac{2}{13}$   
c)  $\frac{2}{52}$   
d)  $\frac{1}{52}$
17. A girl calculates that the probability of her winning the first prize in a lottery is 0.08. If 6000 tickets are sold, how many tickets has she bought?  
a) 750  
b) 480  
c) 40  
d) 240

Rainfall (in cm):	0 - 10	10 - 20	20 - 30	30 - 40	40 - 50	50 - 60
Number of days:	22	10	8	15	5	6

The difference of upper limits of modal and median classes is:

- a) 15    b) 10

c) 30

d) 20

19. **Assertion (A):** In the given figure, a sphere is inscribed in a cylinder. The surface area of the sphere is not equal [1]  
to the curved surface area of the cylinder.



**Reason (R):** Surface area of sphere is  $4\pi r^2$

- a) Both A and R are true and R is the correct explanation of A.      b) Both A and R are true but R is not the correct explanation of A.  
c) A is true but R is false.      d) A is false but R is true.

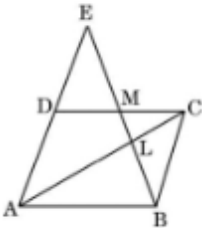
20. **Assertion (A):** The 11th term of an AP is 7, 9, 11, 13 is 67. [1]

**Reason (R):** If  $s_n$  is the sum of first  $n$  terms of an AP then its  $n$ th term  $a_n$  is given by  $a_n = s_n - s_{n-1}$ .

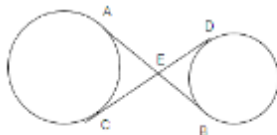
- a) Both A and R are true and R is the correct explanation of A.      b) Both A and R are true but R is not the correct explanation of A.  
c) A is true but R is false.      d) A is false but R is true.

### Section B

21. Prove that  $6 + \sqrt{2}$  is irrational. [2]  
22. In the given figure, ABCD is a parallelogram. BE bisects CD at M and intersects AC at L. Prove that  $EL = 2BL$ . [2]



23. In the given figure, common tangents AB and CD to two circles intersect at E. Prove that  $AB = CD$ . [2]



24. Prove that:  $(\sec A - \tan A)^2 = \frac{1 - \sin A}{1 + \sin A}$  [2]

OR

Express the trigonometric ratio of  $\sec A$  and  $\tan A$  in terms of  $\sin A$ .

25. A horse is tethered to one corner of a rectangular field of dimensions  $70 \text{ m} \times 52 \text{ m}$ , by a rope of length  $21 \text{ m}$ . [2]  
How much area of the field can it graze?

OR

The long and short hands of a clock are  $6 \text{ cm}$  and  $4 \text{ cm}$  long respectively. Find the sum of distances travelled by their tips in  $24$  hours, (use  $\pi = 3.14$ ).

### Section C

26. Shekar wants to plant  $45$  corn plants,  $81$  tomato plants, and  $63$  ginger plants. If he plants them in such a way that [3]  
each row has the same number of plants and each row has only one type of plant, what is the greatest number of plants he can plant in a row?  
27. Find the zeroes of quadratic polynomial  $x^2 - 2x - 8$  and verify the relationship between the zeroes and their [3]

coefficients.

28. Solve the pair of linear equations  $x + y = 5$  and  $2x - 3y = 4$  by elimination and substitution method. [3]

OR

Find two numbers such that the sum of twice the first and thrice the second is 92, and four times the first exceeds seven times the second by 2.

29. From an external point P, a tangent PT and a line segment PAB is drawn to a circle with centre O. ON is perpendicular on the chord AB. Prove that. [3]

- i.  $PA \cdot PB = PN^2 - AN^2$
- ii.  $PN^2 - AN^2 = OP^2 - OT^2$
- iii.  $PA \cdot PB = PT^2$

OR

A point P is at a distance of 29 cm from the centre of a circle of radius 20 cm. Find the length of the tangent drawn from P to the circle.

30. Given that  $16 \cot A = 12$ ; find the value of  $\frac{\sin A + \cos A}{\sin A - \cos A}$ . [3]

31. Calculate the median for the following data: [3]

Classes	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160
Frequency	12	18	23	15	12	12	8

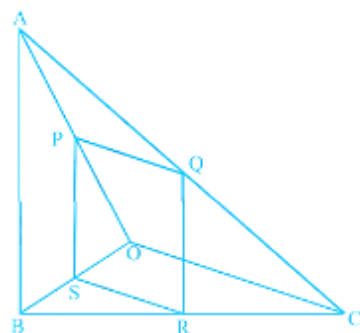
#### Section D

32. The length of the hypotenuse of a right triangle exceeds the length of its base by 2 cm and exceeds twice the length of altitude by 1 cm. Find the length of each side of the triangle. [5]

OR

A truck covers a distance of 150 km at a certain average speed and then covers another 200 km at an average speed which is 20 km per hour more than the first speed. If the truck covers the total distance in 5 hours, then find the first speed of the truck.

33. In the figure, if PQRS is a parallelogram and  $AB \parallel PS$ , then prove that  $OC \parallel SR$ . [5]



34. A student was asked to make a model shaped like a cylinder with two cones attached to its ends by using a thin aluminium sheet. The diameter of the model is 3 cm and its total length is 12 cm. If each cone has a height of 2 cm, find the volume of air contained in the model. [5]

OR

In a cylindrical vessel of radius 10 cm, containing some water, 9000 small spherical balls are dropped which are completely immersed in water which raises the water level. If each spherical ball is of radius 0.5 cm, then find the rise in the level of water in the vessel.

35. Find the mean of the following frequency distribution: [5]

Class Interval	50-70	70-90	90-110	110-130	130-150	150-170
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Frequency	18	12	13	27	8	22
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### Section E

36. Read the following text carefully and answer the questions that follow: [4]

Suman is celebrating his birthday. He invited his friends. He bought a packet of toffees/candies which contains 360 candies. He arranges the candies such that in the first row there are 3 candies, in second there are 5 candies, in third there are 7 candies and so on.

- Find the total number of rows of candies. (1)
- How many candies are placed in last row? (1)
- If Aditya decides to make 15 rows, then how many total candies will be placed by him with the same arrangement? (2)

**OR**

Find the number of candies in 12th row. (2)

37. Read the following text carefully and answer the questions that follow: [4]

To raise social awareness about the hazards of smoking, a school decided to start a 'No smoking' campaign. 10 students are asked to prepare campaign banners in the shape of a triangle. The vertices of one of the triangles are  $P(-3, 4)$ ,  $Q(3, 4)$  and  $R(-2, -1)$ .



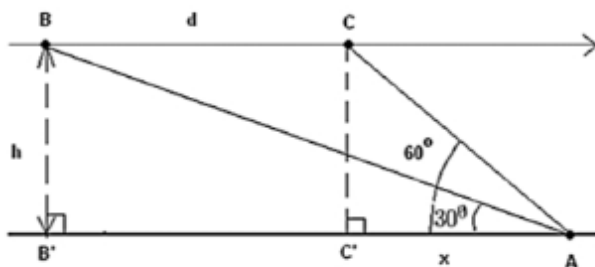
- What are the coordinates of the centroid of  $\triangle PQR$ ? (1)
- If  $T$  be the mid-point of the line joining  $R$  and  $Q$ , then what are the coordinates of  $T$ ? (1)
- If  $U$  be the mid-point of line joining  $R$  and  $P$ , then what are the coordinates of  $U$ ? (2)

**OR**

What are the coordinates of centroid of  $\triangle STU$ ? (2)

38. Read the following text carefully and answer the questions that follow: [4]

Mr. Vinod is a pilot in Air India. During the Covid-19 pandemic, many Indian passengers were stuck at Dubai Airport. The government of India sent special aircraft to take them. Mr. Vinod was leading this operation. He is flying from Dubai to New Delhi with these passengers. His airplane is approaching point  $A$  along a straight line and at a constant altitude  $h$ . At 10:00 am, the angle of elevation of the airplane is  $30^\circ$  and at 10:01 am, it is  $60^\circ$ .



- What is the distance  $d$  is covered by the airplane from 10:00 am to 10:01 am if the speed of the airplane is constant and equal to 600 miles/hour? (1)
- What is the altitude  $h$  of the airplane? (round answer to 2 decimal places) (1)

iii. Find the distance between passenger and airplane when the angle of elevation is  $30^\circ$ . (2)

**OR**

Find the distance between passenger and airplane when the angle of elevation is  $60^\circ$ . (2)