

CBSE SAMPLE PAPER

PRE-BOARD/ SECONDDTERM EXAMINATION, 2008-09

CLASS - X MATHEMATICS

[Time: 3hrs.]

[M. M.: 80]

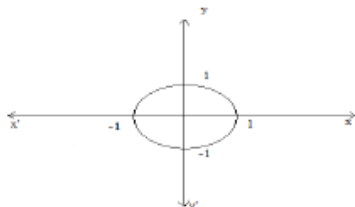
General Instructions:

- (1) All questions are compulsory.
- (2) Questions paper contains one mark in Section A, two marks in Section B, three marks in Section C and 6 marks in Section D.
- (3) Use of Calculators is not allowed.

SECTION - A

[1×10=10]

Q1. The graph of $y = f(x)$ is given in the figure. What is the number of zeroes of $f(x)$?



Q2. If HCF of two numbers 68 and 85 is 17. Then find their LCM.

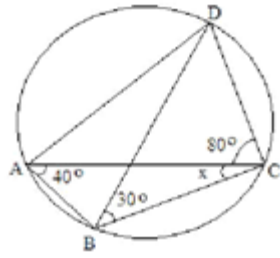
Q3. For what value of k , the root of quadratic equation: $(k + 1)x^2 - 2(k - 1)x + 1 = 0$ Are real and equal.

Q4. If S_n of an A.P. is $3n^2 + 2n$. Find a_{15} .

Q5. If $\cot \theta = 7/8$ then evaluate:

$$\frac{(1 + \sin \theta)(1 - \sin \theta)}{(1 + \cos \theta)(1 - \cos \theta)}$$

Q6. In figure given below, ABCD is a cyclic quadrilateral and $\angle CAB = 40^\circ$, $\angle DBC = 30^\circ$ and $\angle ACD = 80^\circ$. Find the value of x .

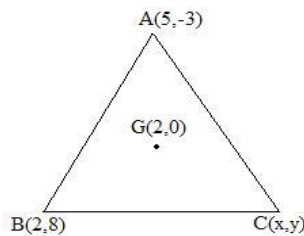


- Q7. Which measure of central tendency can be obtained by the x – coordinate of the intersection of ogives of less than type and more than type?
- Q8. The perimeters of two similar triangles ABC and LMN are 60cm and 48cm respectively. If $LM = 8$ cm, then what is the length of AB?
- Q9. A box contains 20 cards numbered 1 to 20. One card is drawn at random. Find the probability that it bears either an even number or a multiple of 3.
- Q10. A solid sphere of radius r is melted and converted into a cone of height r . Find the radius of the base of cone.

SECTION – B

[2×5=10]

- Q11. Find a quadratic polynomial whose zeroes are $(5 + \sqrt{2})$ and $(5 - \sqrt{2})$.
- Q12. In the given figure, find the co-ordinates of C, where G is the centroid of the ABC where co-ordinates of A are (5, -3), B (2, 8) and G (2, 0):



- Q13. If $\sec 4A = \operatorname{cosec} (A - 20)$ where $4A$ is an acute angle, then find the value of A.
- Q14. Find the perimeter of the sector of a circle with radius 10.5cm and the angle of sector is 60° .
- Q15. A bag contains 5 red, 4 blue and 3 green balls. A ball is taken out of the bag at random. Find the probability that the selected ball is: (i) of red colour (ii) not of green colour.
OR
A card is drawn at random from a well shuffled deck of playing cards. Find the probability of drawing a (i) face card (ii) card which is neither a king nor a red card.

Q16. If the sum of 4th and 8th term of an A.P. is 24 and the sum of 6th and 10th term is 44. Find it's A.P. and also find the sum of first 25 terms.

Q17. Prove that $5 - \sqrt{3}$ is an irrational number. OR

Use Euclid's Division Lemma to show that the square of any positive integer is either of the form $3m$ or $(3m + 1)$ for some integer m .

Q18. Find all the zeroes of $x^4 + x^3 - 9x^2 - 3x + 18$, if two of its zeroes are $\sqrt{3}$ and $-\sqrt{3}$.

Q19. For what value of k , the pair of linear equation has no solution: $3x + y = 1$
 $(2k - 1)x + (k - 1)y = 2k + 1$ OR

Solve these equations graphically and shade the region covered by these lines and the x - axis.

Q20. Draw a pair of tangents to a circle of radius 5cm which are inclined to each other at an angle of 60°

Q21. A container shaped like a right circular cylinder having diameter 12cm and height 15cm is full of ice cream. The ice cream is to be filled into cones of height 12cm and diameter 6cm, having a hemispherical shaped on the top. Find the number of such cones which can be filled with ice cream.

Q22. Prove that the parallelogram circumscribing a circle is a rhombus.

Q23. If $A(-5, 7)$ $B(-4, -5)$ $C(-1, -6)$ and $D(4, 5)$ are the vertices of quadrilateral ABCD then find the area of quadrilateral.

Q24. In what ratio a line segment $x - y - 2 = 0$ divides the line whose end points are $(3, -1)$ and $(8, 9)$?

Q25. Find the value of:

$$\frac{\cos(90 - \theta) \sec(90 - \theta) \tan \theta}{\cos(90 - \theta) \sin(90 - \theta) \cot(90 - \theta)} + \frac{\tan(90 - \theta)}{\cot \theta} + \frac{\sin^2 75^\circ + \sin^2 15^\circ}{\tan 20^\circ \tan 45^\circ \tan 70^\circ}$$

OR

Prove that:

$$\frac{\sin \theta + \cos \theta}{\sin \theta - \cos \theta} + \frac{\sin \theta - \cos \theta}{\sin \theta + \cos \theta} = \frac{2}{1 - 2 \cos^2 \theta}$$

- Q26. A motor boat whose speed is 18km/hr. in still water, takes 1 hour more to go 24km upstream to return downstream to the same spot, find the speed of the stream. OR
Sum of the areas of two squares is 468m^2 . If the difference of their perimeters is 24m, find the sides of two squares.

- Q27. From a window A, 10m above from a point B on the ground. The angle of elevation of the top

C of a tower is x° where $\tan x^\circ = 5/2$ and angle of depression of the foot D of the tower is y°

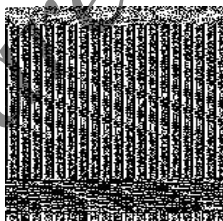
where $\tan y = \frac{1}{4}$. Calculate the height CD of the tower in meters. OR

An aeroplane when 3000m high, passes vertically above another aeroplane. At an instant when the angles of elevations of the two aeroplanes from the same point on the ground are 60° and 45° respectively. Find the vertical distance between the aeroplanes at that instant.

$$(\sqrt{3} = 1.732)$$

- Q28. State and prove Pythagoras. Theorem. Also use the same to prove that the sum of squares of the sides of a rhombus is equal to the sum of squares of its diagonals.

- Q29. A shuttle cock is of the shape of a frustum of a cone, which is mounted on a hemisphere as given in the figure. The diameter of the frustum are 5cm and 2cm. the height of the whole shuttle cock is 7cm. find the total surface area of the shuttle cock.



- Q30. Find the Mean, Mode and Median of the data give below:

Interval	Frequency
0-10	5
10-20	10
20-30	18
30-40	30
40-50	20
50-60	12
60-70	5