# CLASS - X

1. $\frac{1}{1\times 2}+\frac{1}{2\times 3}+\frac{1}{3\times 4}+....\frac{1}{2015\times 2016}=A$ then 2016 A =

1) 2014 2) 2015 3) 2001 4) 1

2. $a\sin\theta+b\cos\theta=c$ then $a\cos\theta-b\sin\theta=$

1) $c\pm\sqrt{a^2+b^2}$ 2) $-c\pm\sqrt{a^2+b^2}$

3) $c\pm\sqrt{a^2-b^2}$ 4) $\pm\sqrt{a^2+b^2-c^2}$

3. Which of the following statements is true

1) $\sqrt{2},\sqrt{3},\sqrt{5}$ are the terms of same A.P

2) $\sqrt{2},\sqrt{18},\sqrt{50}$ are terms of same A.P

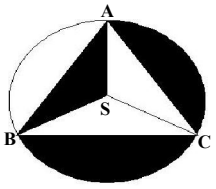
3) $\sqrt{3},\sqrt{5},\sqrt{7}$ can be terms of same A.P

4) $\sqrt{x+1},\sqrt{x+2},\sqrt{x+3}$ are terms of same G.P

4. Area of maximum rectangle inscribed in a circle of radius 4cm must be _____ sq.cm

1) 32 2) 64 3) 128 4) 16

5. ABC is an equalateral triangle with height $\sqrt{3}$.
Then the area of shaded region is _____
where S is circumcenter of $\Delta ABC$.




1) $\frac{8\pi}{9}-\sqrt{3}$ 2) $\frac{8\pi}{9}-\frac{1}{\sqrt{3}}$

3) $\frac{2\pi}{3}-\frac{1}{\sqrt{3}}$ 4) $\pi-\frac{\sqrt{3}}{4}$

6. $a+b\sqrt{2}+c\sqrt{3}=0$; a,b,c $\in$ z then 2a+3b-5c = _____

1) 1 2) -2 3) 11 4) 0

7. ABC is a right angled triangle with hypotenuse 5 and one side satisfies $x^2 - 7x + 12 = 0$ then the length of perpendicular drawn from vertex to hypotenuse is equal to _____

1) 2.4 2) 1.8 3) 3.6 4) 1.7

8. Number of circles that can be drawn passing through all the points (1+t, 2+t) when t = 1, 3, 5, 7, 9 is _____

1) 0 2) 5 3) 10 4) 6

9. Number of all possible circles drawn to touch all the sides of triangle formed by a =4, b = 5 and c = 6 is

1) 1 2) 0 3) 4 4) 3

10. p + q + pq = 8, q + r+ qr = 9, r + p + rp = 3 where p, q, r,>,0 (p, q, r are real) then $\sqrt{(1+p)(1+q)(1+r)}$ =

1) $6\sqrt{2}$ 2) $6\sqrt{10}$ 3) $3\sqrt{5}$ 4) $2\sqrt{5}$

11. PQ and PR are tangents to a circle of radius r. $QR = \sqrt{8}$ and $\angle QPR = 90^0$ then r = ____

1) 1 2) 3 3) $\sqrt{8/3}$ 4) 2

12. A line l touches two circles $S_1$ and $S_2$ of radii 3 & 4 units respecitvely at A and B. $S_1$ and $S_2$ touch each other externally; then length AB =

1) $2\sqrt{3}$ 2) $4\sqrt{3}$ 3) $\sqrt{7}$ 4) $2\sqrt{7}$

13. Number of positive integer pairs (x,y) satisfying 3x+4y=24 is

1) 1 2) 3 3) 4 4) Infinite

14. Three circles of 2 units radius each are kept intact such that each touches other two externally. The area of gap region so formed is

1) $\sqrt{3} - \pi$ 2) $2(2\sqrt{3} - \pi)$ 3) $\frac{\pi\sqrt{3}+2}{2}$ 4) $\frac{\pi+\sqrt{3}}{2}$

15. Number of factors of $x^{32} - y^{32}$ is

1) 6 2) 32 3) 4 4) 2

16. P is a point inside equilateral $\Delta ABC$ of side 8. $PA_1$ ,$PA_2$,$PA_3$, are perpendicular lengths from P to sides of the triangle. Then $PA_1 + PA_2 + PA_3 =$

1) $\sqrt{40}$ 2) $\sqrt{48}$ 3) $\sqrt{32}$ 4) $\sqrt{8}$

17. In a rectangle ABCD, P is an interior point such that PA = 4, PB = 3, PC= 5 then PD=

1) $4\sqrt{2}$ 2) 6 3) 4 4) $3\sqrt{2}$

18. In a class average mark of boys, girls and total sutdents are respectively 50, 60 and 56 then the ratio of no. of boys and girls is

1) 2 : 5 2) 1 : 2 3 ) 2 : 3 4) 5 : 6

19. The last term in $180^{th}$ group of numbers {1}, {2,3}, {4, 5, 6}, {7, 8, 9, 10} ... is

1) 15697 2) 16290 3) 12968 4) 14630

20. A third degree polynomial in x when divided by x - 1, x - 3 leaves remainders 2 and 4 respectively. The remainder obtained when it is divided by $x^2 - 4x + 3$ is

1) 2x + 3 2) x - 4 3) x + 1 4) x + 3

21. $\left(1\frac{1}{2}\right)\left(1\frac{1}{3}\right)\left(1\frac{1}{4}\right)\left(1\frac{1}{5}\right)$.....400 terms =

1) 207 2) 300 3) 301 4) 201

22. Which of the following integers cannot be written as the sum of four consecutive odd integers?

1) 2016 2) 4032 3) 2020 4) 4040

23. If 8 and 2 are roots of $x^2 + ax + \beta = 0$ and 3, 3 are the roots of $x^2 + \alpha x + b = 0$ then the roots of $x^2 + ax + b = 0$ are

1) 1, -1 2) -9, 2 3) -8, -2 4) 9, 1

24. Mean of $x \; and \; \frac{1}{x}$ is m then mean of $x^2 + \frac{1}{x^2}$ is

1) $m^2$ 2) $\frac{m^2}{2}$ 3) $2m^2 - 1$ 4) $2m^2 + 1$

25. Distance between the two points $A(\sin 0^0, \cos 90^0)$ $B(\cos\alpha, \sin\alpha)$ is

1) 2 2) 1 3) 0 4) Cannot say

26. A(1,2) B(-3, 4) C(7,-1) are collinear. Then the ratio in which A divides BC

1) 2 :3 2) 3 : 2 3) 1 : 3 4) 3 : 4

27. Slope of the line $\frac{x}{a\cos\alpha}+\frac{y}{b\sin\alpha}=1$

1) $\frac{-b}{a}\tan\alpha$ 2) $\frac{b}{a}\tan\alpha$ 3) $\frac{a}{b}\tan\alpha$ 4) $\frac{-a}{b}\tan\alpha$

28. P, Q, R the points (l,m) (1,2) (3,4) respectively $PQ \perp QR$ then

1) l - m = 3 2) l + m = 3 3) l + m = 1 4) lm = 3

29. In a circle with radius 14cm, AB is a chrod making an angle $120^0$ at the center O. The area of $\Delta AOB$ is ..... sq.cm

1) $\frac{7\sqrt{3}}{2}$ 2) $\frac{49\sqrt{3}}{2}$ 3) $\frac{49\sqrt{3}}{4}$ 4) $49\sqrt{3}$

30. The ortho center of the triangle formed by the lines $x+2y-3=0$, $2x-y-1=0$; $x+y=5$ is

1) (1, 2) 2) (1, 1) 3) (1, 3) 4) (1, 4)

31. Area of the triangle formed by the line passing through (6, -4) and (-3, 8) along with coordinate axes is

1) 3sq.units 2) 4sq.units 3) 5 sq units 4) 6 sq units

32. The mean of x items is $\bar{x}$. If the first term is increased by 1, second by 2 and so on then the new mean is :

1) $\bar{x}+\frac{n+1}{2}$ 2) $\bar{x}+n$ 3) $\bar{x}+\frac{n}{2}$ 4) $\bar{x}+\frac{n(n+1)}{2}$

33. In a stream running at 2 kmph., a motor boat goes 6km upstream and back again to the starting point in 33min. Find the speed of the motor boat in still water

1) 24kmph 2) 22 kmph 3) 20 kmph 4) 30 kmph

34. O is the center of the circle. BC is a chord. $OD \perp BC$, AB is the diameter then AC =
1) OD 2) 2OD 3) 3OD 4) 4OD

35. The mathematician who developed the theory of sets?
1) Newton 2) George Cantor 3) Euclid 4) Pythogoras

36. Who was the first mathematician to give formula for $\sum n^2$ and $\sum n^3$ for natural numbers
1) Gauss 2) Euler 3) Bhaksara 4) Aryabhata

37. Indian mathematician in their chronological order
A) Brahma Gupta B)Aryabhata C) Bhaskara D) Mahavira
1) A-C-B-D 2) B-A-D-C 3) C-A-B-D 4) D-A-B-C

38. The mathematican who gave an immediate solution to $\sum_{n=1}^{100} n$. When he was a boy of just 10year old ?
1) Newton 2) Renedescartes 3) C.F.Gauss 4) Ramanujan

39. The term 'scne' is derived from a series of transformations of the word
1) Ardhajya 2) Sindie 3) Kotijya 4) Sinus

40. If n = 2 . 3 .4. 5. .... 2015. 2016 then

$$\frac{1}{\log_2 n}+\frac{1}{\log_3 n}+\frac{1}{\log_4 n}+.....\frac{1}{\log_{2016} n}=$$

1) 1 2) 2 3) 3 4) 2016

41. If $\log_{12} 18 = a$ and $\log_{24} 54 = b$ then ab + 5(a - b) =
1) 1 2) 2 3) 4 4) 5

42. If $\sqrt{\frac{1+\cos\theta}{1-\cos\theta}} = \cos ec\theta + \cot\theta$ then $\theta$ lies in the quadrants
1) I or III 2) I or II 3) I or IV 4) II or III

43. $\left[\frac{\sqrt{3}+2\cos A}{1-2\sin A}\right]^{-3}+\left[\frac{1+2\sin A}{\sqrt{3}-2\cos A}\right]^{-3}$ =_____ for valid angular values of A

1) 1 2) $\sqrt{3}$ 3) 0 4) -1

44. The sum of the integers from 1 to 100 which are not divisible by 3 or5 is

1) 2317 2) 2632 3) 4735 4) 2489

45. $\sqrt{(1\times2\times3\times4)+1}=5,\sqrt{(2\times3\times4\times5)+1}=11,\sqrt{(3\times4\times5\times6)+1}=19 \text{ then } \sqrt{(43\times44\times45\times46)+1}=$

1) 1978 2) 1979 3) 1980 4) 1981

46. If n(A) = n(B) then A,B are ____ sets

1) Disjoint 2) Equal 3) Equivalent 4) Comparable

47. In a class of 40 students, who takes tea or coffee, 20 takes tea but not coffee and 24 takes tea then the no. students who takes coffee only is

1) 4 2) 16 3) 20 4) 32

48. If A = {a,b,c,d,e,f} then the no. subsets of A which contains {a,c,e} is

1) 8 2) 16 3) 32 4) 64

49. If $n \in N \text{ then } x^{2n+1}+y^{2n+1}$ is divisible by

1) x -1 2) x - y 3) x + y 4) x + 1

50. If $x^2+Px+q=0 \text{ and } x^2+qx+p=0$ have a common root then $1+p^3+q^3=$

1) 1 2) pq 3) 2pq 4) 3pq

51. The roots of $\frac{31}{x-47}+\frac{47}{x-31}=2$ are

1) 38, 77 2) 39, 78 3) 39, 79 4) 39, 77

52. A train running between two stations A and B arrives at its destination 10 min late when its speed is 50km/hr and 50 minutes late when its speed is 30km/hr. How far is station A from B

1) 30 2) 40 3) 50 4) 60

53. If the ratio of boys to girls in a class is B and the ratio of girls to Boys is G, then 3(B+G) =

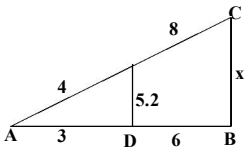
1) 3 2) < 3 3) > 3 4) < $\frac{1}{3}$

54. A person invests money in 3 different schemes for 6, 10, 12 years at 10%, 12% 15% simple interest respectively. At the completion of each scheme, he gets same interest. What is the ratio of investments

1) 2 : 3 : 6 2) 6 : 3 : 2 3) 3 : 5 : 6 4) 6 : 5 : 3

55. In $\Delta ABC$, DE|| BC then x =

1) 10.4 2) 2.6
3) 15.6 4) 20.8




56. In $\Delta ABC$, D, E, F are the mid points of AB, BC, CA respectively. The coordiantes of DEF are D(2,7) E(3,6) F (4, 8) then vertex A is

1) (1 , 5) 2) (3, 9) 3) (5, 7) 4) (6, 12)

57. If a,b,c are in G.P. than $\log a$, $\log b$, $\log c$ are in

1) A.P 2) G.P 3) H.P 4) NONE

58. If $f(x) = 2^x$ *then* $\frac{f(x+3)}{f(x-1)} =$

1) f(x) 2) f(2) 3) f(4) 4) f(3)

59. If $\alpha$ *and* $\beta$ are the roots of $ax^2 + bx + c = 0$ then $\alpha^2 + \beta^2 =$

1) $\frac{b^2}{a^2}$ 2) $\frac{c^2}{a^2}$ 3) $\frac{b^2 - 4ac}{a^2}$ 4) $\frac{b^2 - 2ac}{a^2}$

60. nth term of 1 + (1 + 3) + (1+ 3 +5)+ (1 + 3 + 5 +7) + .....

1) 1 + 3 + 5 + ...+n 2) $n^2$ 3) 2n-1 4) $\frac{n(n+1)}{2}$