CLASS - X

1) Number of integer pairs (x, y) satisfying $x^2 + xy + 1 = 0$ is________

1)4 2)0 3)2 4)∞

2) Number of stright lines passing through all the points (3,4) (1,1) (4,7) (-3,-7) (0,-1) is ____

1)5 2)4 3)0 4)1

3) Area of the circle inscribed in a square of perimeter 12cm is________approxmiately

1) $\frac{28}{9}$ sq.u 2) $7\frac{1}{14}$ sq.u 3) $4\frac{3}{7}$ sq.u 4) $\frac{22}{7}$ sq.u

4) $a + b\sqrt{2} + c\sqrt{3} = 0$ such that a, b, c $\in$ set of integers then 2a + b + 3c + 5=______

1)prime number 2)Multiple of 4 3)Multiple of 11 4)Divisible by 3

5) $\sin\theta + \sin^2\theta = 1$ Then $\cos^6\theta + \cos^4\theta - \sin\theta =$_______

1)cos 90^0 2)cos 45^0 3)sin 60^0 4)sin30^0

6) π day was celebrated on ____

1) March, 7th 2) March, 14th 3) March 21st 4) September 15th

7) $x^4 + x^2 + 1 = (x^2 - x + 1)(ax^2 + bx + c)$ then 2a - 3b + 4c =________________

1) 3 2) -6 3) -2 4) 0

8) $x^{\log_x y} + y^{\log_y x} = 4$ and $x\log_x y = 2$ then 2x + 3y = 10 represents geometrically a_____

1) stright line 2)circle with radius 2 3) square of area 4 4)none of these

9) An equilateral triangle is inscribed in a circle of circumference 6π units.Its height is____units

1) $\frac{9}{2}$ 2) $2\sqrt{3}$ 3) $3\sqrt{3}$ 4) 6

10) How many of the following statements are true

$S_1 : \sec^2\theta \operatorname{cosec}^2\theta = \sec^2\theta + \operatorname{cosec}^2\theta$

$S_2 : \sin^4\theta - \cos^4\theta = 1 + 2\cos^2\theta$

$S_3 : \sec\theta - \tan\theta = x \Rightarrow \tan\theta + \sec\theta = -x^{-1} \text{ for } x > 0$

$S_4 : (\tan\theta + \cot\theta)^2 - (\cot\theta - \tan\theta)^2 = 2(\tan^2\theta - \cot^2\theta)$

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

11) $(\cos ec50^0 + tan40^0)(\cot 50^0 - \sec 40^0) =$ ______

1) 1 2) -1 3) ∞ 4) $-\infty$

12) $1^2 - 2^2 + 3^2 - 4^2 + ... + 2017^2$ is _______

1) divisible by 3 2) divisible by 47 3) divisible by 1009 4) divisible by 2016

13) The author of Sidhantha Siromani________

1) Aryabhatta 2) Bhaskaracharya 3) Varahamihara 4) Apastambha

14) Example 4! = 4 x 3 x 2 x 1. and 3! = 3 x 2 x 1.If $\frac{(n+2)!}{n!}$ =90 then (n-3)! + (n-6)! = _

1) 121 2) 122 3) 123 4) 124

15) The length of the minute hand of a clock is 14cm.. Find the area swept by the minute hand in 10 minutes (approximately)

1) $112cm^2$ 2) $102cm^2$ 3) $117cm^2$ 4) $92cm^2$

16) $3x^2 + 4y^2 = 15$ *and* $4x^2 + 3y^2 = 6$ *then* $x^4 + y^4 + 2x^2y^2 - 8 =$ _______

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

17) The modern study of set theory was initiated by

1) Sakuntala Devi 2) George Cantor 3) Rene Descartes 4) Euclid

18) N = 1+11+111+1111+..........10 terms . Then digital sum of N is________

1) 27 2) 37 3) 28 4) 30

19) "The diagnoal of a rectangle produces by itself the same area as produced by its both sides (i.e length & breadth)"- This theorem is referred as _____

1) Basic proportionality theorem 2) Converse of basic proportionality theorem

3) Boudhayan theorem 4) Alternative segment theorem

20) If a, b > 0 and a + b = 1 then the least value of $a^4 + b^4$ is_____

1) 1 2) $\frac{1}{2}$ 3) $\frac{1}{4}$ 4) $\frac{1}{8}$

21) Both the roots of a quadratic equation $x^2 - 12x + \lambda = 0$ are prime numbers. Sum of all such λ is_____

1) 25 2) 35 3) 21 4) 42

22) The perimeter of a right angled isosceles triangle is 34.14units approximately. Then its area is nearly________sq.u

1) 40 2) 34 3) 64 4) 50

23) $\left(1+\frac{1}{5}\right)\left(1+\frac{1}{6}\right)\left(1+\frac{1}{7}\right)............\left(1+\frac{1}{2014}\right)=$ ____________

1) 147 2) 403 3) 2013 4) 2017

24) In a ΔABC the line drawn parallel to BC meet AB and AC at D & E respectively. If DE=4cm, BC= 8cm and area of $\Delta ADE = 25$ sq.cm.Then the areal of ΔABC is __sq.cm

1) 50 2) 100 3) 125 4) 75

25) Number of real roots of $6\left(2^x+2^{-x}\right)=13$ is_____

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

26) Number of circles having the radius 2017cm and touching both the co-ordinate axes will be___

1) 2017 2) 4 3) 1 d) 0

27) If the AM and GM of the roots of the Quadratic equation are $\frac{14}{3}$ and $\frac{2}{3}$ respectively. Then the equation is_______

1) $9x^2-84x+4=0$ 2) $3x^2-14x+7=0$

3) $17x^2-19x+13=0$ 4) $4x^2-12x+3=0$

28) Sum of terms in 100^{th} group of $\{1\},\{2,3\},\{4,5,6,\},\{7,8,9,10\}$..........

1) $300\left(10^3+1\right)$ 2) $100\left(10^4-1\right)$ 3) $50\left(10^4+1\right)$ 4) $200\left(80^2+1\right)$

29) Who is considered as father of statistics

1) Euclid 2) RA Fisher 3) Ramanujan 4) Rene Descartes

30) $\sin^2 x+\cos^2 y+\sin^2 z=3$ *Then* $\tan^2\frac{x}{2}+\sec^2 y+\cos ec^2 z=$ _______

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

31) Sum of 24 A.M's inserted between 100 and 200 will be____

1) 3100 2) 3900 3) 5200 4) 6300

32) $x = 7 - 4\sqrt{3}$; $xy = 1$ *Then* $\frac{x^2 - y^2}{14\sqrt{3}} + \frac{x^2 + y^2}{97} =$ ________

1) 1 2) $14\sqrt{3}$ 3) -6 4) $-\frac{15}{2}$

33) $x^2 + x + 6 = 0$ *and* $ax^2 + 3bx + c = 0$ have both roots common if______

1) 4a+6b-c=0 2) a+b+c+6=0 3) 2a+b-c=0 4) 2c-6b+c=0

34) The cost of a car is Rs.4,00,000 at present. If the value depreciate 15% in the first year, 13.5% in the second year, 12% in the third year and so on. What will be its value at the end of 10 years, when all percentages will be applied to original cost.

1) Rs.60,000 2) Rs.64,000 3) Rs.68,000 4) Rs.70,000

35) $\log_2 \log_3 \left(x^2 - 4x + 12\right) = 1$ *Then* $x^2 + 4x + 2 =$ _____

1) 10 2) 7 3) -1 4) -2

36) Number of positive integer pairs (x,y) such that 4x+3y=24 is______

1) 6 2) 4 3) 2 4) One

37) Condition that (a, 0) (0, b) and (x_1, y_1) are collinear is _______

1) $bx_1 + ay_1 = ab$ 2) $ax_1 + by_1 = ab$

3) $x_1 + y_1 = a + b$ 4) $x_1 - y_1 = a - b$

38) A(0, -1), B(2, 1), C(0, 3) are the vertices of a ΔABC then the Median through B has a length of______ units

1) 2 2) 3 3) 6 4) 9

39) Who first said that something divided by zero cannot be defined.

1) Apastambha 2) Varahamihira 3) Archemedes 4) Bhaskaracharya

40) $x^2 + y^2 = 1$ *Then* $\left(3x - 4x^3\right)^2 + \left(4y^3 - 3y\right)^2 =$ _____

1) 14 2) 12 3) 0 4) 1

41) Perpendiculars are drawn from an interior point P of a rectangle to its sides AB, BC, CD and DA. These perpendicular lengths are respectively denoted by $P_1 = 5$, $P_2 = 8$, $P_3 = 4$ and P_4 then P_4 is______

1) 1 b)2 c)8 d)9

42) In a parallelogram ABCD, 'P' is the point of intersection of the angular bisectors of $\angle A$ and $\angle B$ then $\angle ADB =$_____

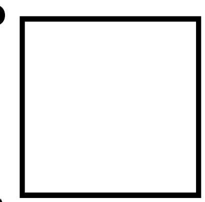
1) $< 90^0$ 2) $> 90^0$ 3) $= 90^0$ 4) can't say

43) Number of integers between 1 and 1000 which are divisible by either 5 or 7 is ___

1) 340 2) 432 3) 287 4) 313

44) ABCD is a square in the adjacent figure then its area is____

1) 16 2) 49
3) 9 4) 25



45) Average of a_i items is a_i : i = 1, 2, ...n Then the average of all these terms is _____

1) $\frac{\sum a_i^2}{\sum a_i}$ 2) $\frac{\sum a_i}{\sum a_i^2}$ 3) $\frac{\sum a_i}{n}$ 4) $\frac{n}{\sum a_i}$

46) Number of circles touching all the lines x + y = 1 , x - y = 1 and 2x + y = 3 is_______

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

47) $\cos 1^0 + \cos 2^0 + \cos 3^0 + ...+ \cos 178^0 + \cos 179^0 =$_________

1) 0 2) 90 3)180 4) none of these

48) If $a = b^2 = c^3$ then $\log_c ab =$ __

1) $\frac{2}{9}$ 2) $\frac{9}{2}$ 3) $\frac{1}{9}$ 4) $\frac{1}{2}$

49) The sum of 1st 'n' terms of the series $1^2 + 2.2^2 + 3^2 + 2.4^2 + 5^2 + 2.6^2 + ...$ is $\frac{n(n+1)^2}{2}$ when 'n' is even. When 'n' is odd the sum is ______

1) $\frac{n(n+1)^2}{4}$ 2) $\frac{n^2(n+1)}{2}$ 3) $\frac{3n(n+1)}{2}$ 4) $\left[\frac{n(n+1)}{2}\right]^2$

50) If x, y > 0 and $x = \sqrt{2\sqrt{2\sqrt{2\sqrt{2..........\infty}}}}$ and $y = \sqrt{6\sqrt{6\sqrt{6\sqrt{6..........\infty}}}}$ then $x^y - y^x =$ _________

1) 28 2) 216 3) -1 4) -216

51) If zeros of the polynomial $f(x) = x^3 - 3px^2 + qx - r$ are in AP then _______

1) $2p^3 = pq - r$ 2) $2p^3 = pq + r$ 3) $p^3 = pq - r$ 4) $p^3 = pq + r$

52) If Mahesh father deposited Rs.1000 on every birth day of his son in a bank giving 10% simple interest per annum. Then the amount he gets on his 21^{st} birth day.

1) Rs.3000 2) Rs.40,000 3) Rs.50,000 4) Rs.41,000

53) If 4 circles of radius 2 units each are kept in touch such that each touches two others then the area of gap region thus formed will be

1) 4π 2) $4(4-\pi)$ 3) $8\left(2-\frac{\pi}{2}\right)$ 4) $8\left(1-\frac{\pi}{4}\right)$

54) If $y = ax + b$ *and* $y^2 + 3y + 2 = x^2 + 3x + 2$ then b = ______

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

55) If $(a-x)^2 + (b-x)^2 = (a-b)^2$ then x = ______

1) a 2) b 3) a and b 4) Insufficient data

56) In what ratio does the point (-4, 6) divide the line segment joining the point A(-6, 10), B(3, -8)?

1) 7:2 2) -2:7 3) -7:2 4) 2:7

57) $\Delta ABC \sim \Delta PQR$. M is the midpoint of BC and N is the midpoint of QR. If $\Delta ABC = 100cm^2$ and $\Delta PQR = 144cm^2$ and AM = 4cm then PN =________

1) 12cm 2) 4cm 3) 4.8cm 4) 5.6cm

58) If $A^c = B$ then $A \Delta B =$

1) $(A \cup B) - (A \cap B)$ 2) $A \cup B$ 3) μ 4) All the three

59) If a ΔABC is inscribed in a circle whose center is 'O' then $\underline{|A} + \underline{|OBC} =$

1) $< 90^0$ 2) $> 90^0$ 3) $= 90^0$ 4) 120^0

60) $x = a^3b^2c^{11}$, $y = b^8c^9a^7$, $z = a^6c^4b^2$ then 4th root of xyz = $a^pb^qc^r$ satisfies the condition

1) $pq - r = 1$ 2) $p - \frac{2r}{q} = 0$ 3) $p + q - r = 0$ 4) $r - q = 4 - p$