Class IX

1. If $x + y + z = 0$ then $\left(\frac{x^2}{yz}+\frac{y^2}{zx}+\frac{z^2}{xy}\right)^2 =$ _____

1) 1 2) 0 3) 9 4) 3

2. Number of positive integer pairs (a, b) satisfying $2a + b = 8$

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

3. In an equilateral triangle semi perimeter is equal to 1 + h. Where h is height of the triangle. Then the side of the triangle must be____

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

4. $\frac{1}{a(a+1)}+\frac{1}{(a+1)(a+2)}+\frac{1}{(a+2)(a+3)}$.....100 *terms* =_____when a=2

1) $\frac{45}{91}$ 2) $\frac{25}{51}$ 3) $\frac{101}{198}$ 4) $\frac{41}{95}$

5. Number of perfect square numbers in first 1000 natural numbers is x. Number of perfect 4th powers in the same set of 1000 natural numbers is y, then $\frac{x-y^2}{x-3y-10}$ = ____

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

6. Number of right angled triangles having sides in the ratio 3 : 4 : 5 is_____

1) 1 2) 3 3) 9 4) infinity

7. If $\sqrt{x\sqrt{x\sqrt{x.....}}} = \sqrt{x+\sqrt{x+\sqrt{x+.....}}}$ then x = _____

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

8. Number of whole number triplets (x,y,z) satisfying $x\sqrt{2}+y\sqrt{3}+z\sqrt{5}=0$ is___

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

9. Number of parallelograms formed when 4 parallel lines are cut by another set of three parallel lines is_____

1)18 2)12 3)24 4)36

10. $x=\sqrt{3}+2,\ xy=1$ *Then* $x^4+y^4=$ _____

1)194 2)204 3)196 4)198

11. $\sqrt{2+\sqrt{2+\sqrt{2+\sqrt{.....\infty}}}}$ = _____

1)2 2)1 3) $\sqrt{2}$ 4) $\sqrt[4]{2}$

12. If ax^2+bx+c and bx^2+ax+c have a common factor $x+1$ then ____

1) a = b and $c\neq 0$ 2) a = b and c = 0

3) a $\neq$ b and c = 0 4) None

13. If $5x+3y+8=0$ has a solution $(2k+1,k)$ then k =_____

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

14. $2x^2+3y^2=7$, $3x^2+2y^2=3$ then $(x+y)^2-2xy$ =_____

1)2 2)3 3)7 4)5

15. If $x^2+6x+1=0$ *then* $x^2+\frac{1}{x^2}=$ _____

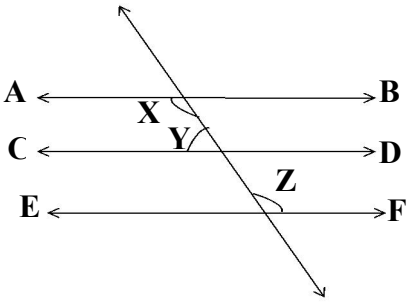
1)30 2)34 3)63 4)64

16. _____ was born on March 14th, 1879.

1) Archimedice 2) Rene Descartes

3) Albert Einstein 4) Pythogarus

17. The adjascent figure AB|| CD, CD|| EF and y : z = 3:7 then x + y - z =



1) 72^0 2) 54^0

3) 126^0 4) 0^0

18. If (a+1) (b+1) (c+1)=24 then (a-1) (b-1) (c-1)=_____

1)4 2)7 3)0 4)5

19. In a ΔABC a point p is joined to all the three vertices such that area's of ΔPAB , ΔPBC and ΔPCA are equal. Number of such points p will be_____

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

20. Remainder when x^2+x+1 divides x^4+x^2+1 is R, then R^4+R^2-R+15 is not divisible by

1)9 2)3 3)5 4)15

21 .The three points $(8,5)$ $(0,-3)$ $(2,-1)$ always lie on the line _____

1) y + x + 3 = 0 2) -x + y + 3 = 0
3) 2x - y -1 = 0 4) 3x - y = 1

22. In a triangle ABC if an angular bisector of A bisects BC then it is _____ triangle

1) Euqilateral 2) Right angled 3) Isoceles 4) Congruent

23. Who is the first mathematician computed the Value of π

1) Euclid 2) Archemedice 3) Bhaskaracharya 4) Ramanujan

24. If $x+\frac{1}{x}=2$ then $x^{1024}+\frac{1}{x^{1024}}=$ ___

1) 2^{1024} 2) 1024 3) 1 4) 2

25. The sides of right angled triangle are connected by x + y + z = 24 and x < y < z are all natural numbers then the area of triangle must be_____

1)12 2)24 3)48 4)72

26 . A rectangle of dimensions l, b (l > b) satisfing $x^2-7x+12=0$ is inscribed in a circle of area____

1) 6.25π 2) 3.75π 3) 1.25π 4) 5π

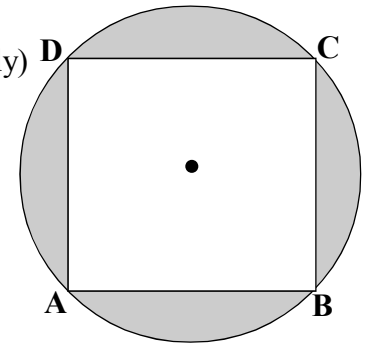
27. $n!$ =1x2x3x.....xn then $\frac{(n+3)!}{n!}=An^3+Bn^2+Cn+D$ $\Rightarrow$ A+B+C+D=_____

1)24 2)36 3)44 4)16

28. $(1+x)(1+x^2)(1+x^4)(1+x^8)A$ is a polynomial of degree 16. Then A can be

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

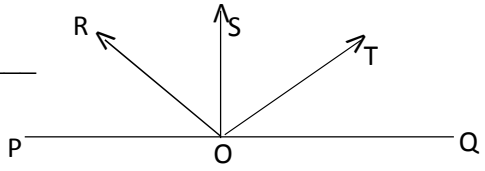
29. ABCD is a square of maximum area inscribed in the circle of radius 7 Then area of shaded region is____(approxmately)



1)34 2)56
3)64 4)73

30. Co-ordinate Geometry was introduced by ____
1) Archemedice 2) Rene Descartes
3) Pythogarous 4) Euclid

31. In the adjecent figure ray OS stands on a line PQ. Ray OR and ray OT are angle bisectors of $\angle POS$ and $\angle SOQ$ respectively. Then $\angle ROT$ = _____



1) 45^0 2) 60^0
3) 90^0 4) 105^0

32. In a parallelogram ABCD, the angular bisectors of $\angle A$ and $\angle B$ are interseting at P then $\angle APB$ =
1) 60^0 2) 90^0 3) 45^0 4) 30^0

33. Number of real solutions of the equation $\sqrt{x-2}+\sqrt{2-x}=5$ is_____
1)2 2)4 3)5 4)0

34. Remainder when 5^{400} is divided by 625^{50} is_____
1)0 2)1 3)5 4)50

35. The angular bisectors of a parallelogram forms _____
1) Parallelogram 2) Rhombus 3) Rectangle 4) Square

36. The sum of base angle and vertex angle of a golden traiangle is ___
1) 72^0 2) 36^0 3) 108^0 4) 90^0

37. Number of primes less than or equal to 99 is_____
1)14 2)25 3)11 4)33

38. $\left(2^x+2^{-x}\right)\left(3^{-x}+3^x\right)=1$ is satisfied by _____(number of values of x)
1) Exactly1 2) Exactly2
3) Almost 4 but atleast 2 4) zero

39. ABC is a right angled triangle with A as vertex of right angle. If AB = 3, AC = 4, then length of perpendicular drawn from A on BC must be____units

1)4.2 2)3.6 3)2.4 4)1.8

40. Center of circle which passes through the points (3,4) (-3,4) and (-4,3) is_____

1)(1,1) 2)(0,0) 3)(-2,-3) 4)(-2,-2)

41.(x+1)(x-a)=1 is satisfied by integer values of x. then $a^2+2a+3=$_____

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

42. $25^{a+b}\ 5^{b+c}\ 625^{c+a}=3125$ *Then* $\frac{2a+b}{1-c}=$_____

1) $\frac{5}{3}$ 2) $\frac{6}{5}$ 3) $\frac{11}{4}$ 4)1

43. $\frac{1}{1^2}-\frac{1}{2^2}+\frac{1}{3^2}-\frac{1}{4^2}+.....+\frac{1}{2017^2}-\frac{1}{2018^2}=A$; $\frac{1}{2018^2}+\frac{1}{2017^2}+.....+\frac{1}{2^2}+\frac{1}{1^2}=B$

Then $\frac{1}{1^2}+\frac{1}{2^2}+.....+\frac{1}{1009^2}=$_____

1) $\frac{2A-B}{2}$ 2) $\frac{A+B}{2}$ 3) $\frac{B-A}{2}$ 4)2(B - A)

44. Number of orderd integer pairs (x,y) such that $x^y=y^x$ is_____

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

45. Which is wrong statement?

1)Sum of two prime numbers may be a prime number
2)Product of two prime numbers may be even number
3)Difference of two prime numbers may be a prime number
4)Ratio of two prime numbers may be an integer

46. If $p^2=1-q^2$ *Then* $\left(3p-4p^3\right)^2+\left(4q^2-3\right)^2q^2$

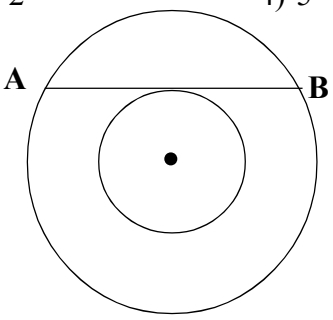
1)0 2) $2p^2q^2$ 3)1 4) $p^3+q^3-p^2q$

47.A new operation $*$ is defined by $a*b=a+b-ab$. [$e.g\ 2*3=2+3-6=-1$

$4*4=4+4-16=-8$ etc] $then\ a*(a+1)+a*(a-1)=0$ has sum of roots_____

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

48. Two concentric circles are shown in the figure. AB=8, radius of inner circle is 3. Area between these circles is _____



1) 4π 2) 8π

3) 16π 4) 64π

49. In which triangles corresponding parts are equal

1) Equilateral triangles 2) Right angled triangles

3) Isoceles triangles 4) Congruent triangles

50. $\left(1+\frac{1}{2}\right)\left(1+\frac{1}{3}\right)\left(1+\frac{1}{4}\right).....\left(1+\frac{1}{2009}\right)=$ _____

1) $\frac{1005}{2}$ 2)2010 3)1005 4) $\frac{2009}{2}$

51. Number of circles that can be drawn through three mid points of sides of given triangle is_____

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

52.Sum of all positive integral divisors of 64 is_____

1)164 2)127 3)128 4)256

53. The diagonal of a rectanglar field is 100m. Length and breadth are in the ratio 4:3. The area of the field is____ sq.m

1)1400 2)6400 3)4800 4)8400

54. If all the multiples of 3 are deleted from first 100 natural numbers, then sum of the remaining numbers is_____

1)3980 2)3367 3)4163 4)4147

55. $\sqrt{8+\sqrt{8+\sqrt{8+\sqrt{.....\infty}}}} = x$ *Then* $x - \frac{8}{x} =$ _____

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

56. Missing term in the series $\frac{1}{1001}, \frac{1}{504}, \frac{3}{1027}, \_\_\_\_\_, \frac{5}{1125},$

1) $\frac{1}{266}$ 2) $\frac{4}{1073}$ 3) $\frac{1}{611}$ 4) $\frac{3}{1107}$

57. If $x + y + z = 0$ then $\frac{x^2}{yz} + \frac{z^2}{xy} + \frac{y^2}{zx} + 4$ is_____number

1) even 2) prime 3) square 4) odd cube

58. One factor of $x^3 - 23x^2 + 142x - 120$ is

1) (x-1) 2) x + 10 3) x - 10 4) x - 5

59. $x + y + xy = \frac{3}{2}$ $y + z + yz = \frac{1}{5}$ $z + x + zx = \frac{1}{3}$ *Then*

$1 + x + y + z + xy + yz + zx + xyz =$ ____

1) $\frac{11}{35}$ 2) $\frac{41}{3}$ 3) 4 4) 2

60. If the diaganal of a square is 'a' units. what is the diagonal of the square whose area is double that of the 1st square.

1) 2a 2) a^2 3) $\sqrt{2}a$ 4) $\frac{a^2}{2}$