

NET Mathematics MCQs

1) If a die is rolled twice then what is the probability that the sum of the number of dots shown is 8?

- A. $\frac{5}{36}$ (Correct)
- B. $\frac{4}{36}$
- C. $\frac{1}{12}$
- D. $\frac{1}{2}$

2) What is the sine inverse of $\sin(\pi/2)$?

- A. 1
- B. $\pi/2$ radians
- C. 90 degrees
- D. Both B and C (Correct)

3) What is the derivative of the inverse cosecant function?

- A. $(-1)/[|x|\sqrt{x^2-1}]$ (Correct)
- B. $(-1)/[|x|\sqrt{x^2+1}]$
- C. $1/[|x|\sqrt{x^2-1}]$
- D. $1/\sqrt{x^2-1}$

4) What is the domain of the inverse cosecant function?

- A. $[-1, 1]$
- B. \mathbb{R}
- C. $\mathbb{R} - (-1, 1)$ (Correct)
- D. $(-1, 1)$

5) Evaluate: $[\sin^{-1}][3/4] + [\sin^{-1}][\sqrt{7}/4]$

- A. $[\cos^{-1}](0)$
- B. $[\sin^{-1}](1)$
- C. $[\tan^{-1}](\text{infinity})$
- D. All of these (Correct)

6) How many hours are there in 360 degrees?

- A. 21600
- B. 360 (Correct)
- C. 60
- D. 3.14

7) How many terms are there in the expansion of $(1+x)^n$; considering that 'n' is positive?

- A. $n+1$ (Correct)
- B. n

- C. Infinite
- D. $n-1$

8) What is the derivative of $2t^3$ with respect to $3t^2$?

- A. $2t^3$
- B. t (Correct)
- C. t^2
- D. $1/t$

9) $1, 1/3, 1/5, 1/7 \dots$ is a/an _____ sequence.

- A. Fibonnaci
- B. Harmonic (Correct)
- C. Geometric
- D. Arithmetic

10) What is the difference between the arithmetic mean and the geometric mean of 5 and 7?

- A. 0.8
- B. 0.08 (Correct)
- C. 0.008
- D. 0.0008

11) What is the real component of the complex number $(4-i)^2$?

- A. -8
- B. 17
- C. 15 (Correct)
- D. Missing information

12) Which one of the following properties of sets is said to be the commutative property?

- A. $A \cup B = B \cup A$ (Correct)
- B. $A = B$
- C. $A \cup (B \cap C) = (A \cup B) \cap C$
- D. $A' = U - A$

13) If $x^4 - 3x^2 + 4 = 0$ then its roots are:

- A. 2, -2, i and $-i$ (Correct)
- B. 1, -1, i and $-i$
- C. i only
- D. Impossible to determine

14) What are the cube roots of unity?

- A. 1, -1, i and $-i$
- B. 1, -1 and i

- C. There doesn't exist such entities in mathematics
D. 1, $[-1+\sqrt{3}i]/2$ and $[-1-\sqrt{3}i]/2$ (Correct)

15) If $4x/(x-1)(x+1)=A/(x-1)+B/(x+1)$ then the values of 'A' and 'B' are:

- A. 2 and 2 (Correct)
B. 2 and -2
C. 1 and -1
D. Impossible to determine

16) What is the nth term of the sequence: 1, 3, 5, 7...?

- A. $2n-1$ (Correct)
B. $2n+3$
C. $2n$
D. It is impossible to find the nth term for such a sequence

17) What are the two numbers whose sum is 20 but their product is minimum?

- A. 10, 10
B. 15, 5
C. 0, 20 (Correct)
D. 1, 19

18) The set of points $P(x,y)$ in which x and y both are less than zero, lie in which quadrant?

- A. I
B. II
C. III (Correct)
D. IV

19) What is the same as $\sin(-a)$?

- A. $-\sin(a)$
B. $\sin(a)$
C. $-\tan(a)/\sec(a)$
D. Both A and C (Correct)

20) What is the domain of the function $f(x)=1/\sqrt{x^2+3x+2}$?

- A. $(-1,+\infty)\cup(-2,+\infty)$ (Correct)
B. $(-1,-2)$
C. Set of real numbers
D. $(-\infty,+\infty)$

21) If $f(x)=x^3$, then what is its inverse?

- A. $x^{(1/3)}$
B. 3^x
C. $[x^{(2/3)}]^{0.5}$
D. Both A and C (Correct)

22) If in a triangle, $a=200$, $b=120$ and $\gamma=150$ degrees, then what is the area of the triangle?

- A. 10932
- B. Impossible to determine
- C. 7050
- D. 6000 (Correct)

23) Use analytical geometry to determine to classify the quadrilateral ABCD with vertices A(-1,0), B(3,3), C(6,-1), and D(2,-4).

- A. Parallelogram
- B. Square (Correct)
- C. Rhombus
- D. Trapezium

24) Tell the relationship between x and y .

x	0	1	2	3	4	5	6	7	8
y	Undefined	0	0.693	1.099	1.386	1.609	1.792	1.946	2.079

- A. $y=\ln x$ (Correct)
- B. $y=\log x$
- C. $y=1/x$
- D. $y=e^x$

25) The feasible solution which maximizes or minimizes the objective function is called:

- A. Optimal solution (Correct)
- B. Feasible solution
- C. Linear solution
- D. Quintic solution

26) Evaluate: $(\sin(\theta)-1)^2+(\sin(\theta)+1)^2$

- A. $2[1+(\sin^2)(\theta)]$ (Correct)
- B. $1+(\sin^2)(\theta)$
- C. 1
- D. $2+(\sin^2)(\theta)$

27) If one of the lengths of the sides of an equilateral triangle is 10, then what is the area of the triangle?

- A. $25\sqrt{3}$
- B. 43.30
- C. Both A and B (Correct)
- D. Missing information

28) Iota expressed in the form of coordinates is:

- A. (0,1) (Correct)

- B. (1,0)
- C. (0,0)
- D. It is impossible to express a complex number in the form of coordinates

29) What is the sum of angles in a quadrilateral?

- A. 120
- B. 180
- C. 270
- D. 360 (Correct)

30) What is the power of fourth power of 'x' in the sixth power of (2-x)?

- A. 24 (Correct)
- B. 10
- C. 6/4
- D. 2

31) What is the sum of the first 50 real numbers?

- A. 500
- B. 1275 (Correct)
- C. 1200
- D. 8900

32) Orders of some matrices are given in the following. Which one of them cannot be multiplied?

- A. $m \times n$, $n \times p$ where m , n and p are all positive integers
- B. $a \times b$, $b \times c$ where a , b and c are all positive integers
- C. 1×2 , 2×6
- D. 3×5 , 4×1 (Correct)

33) $\sin(\pi/3)$ is equal to?

- A. 0.866 (Correct)
- B. 0.500
- C. 0.707
- D. 0.966

34) What is the formula for $\tan \theta$?

- A. $\sin \theta / \cos \theta$
- B. $1 / \cot \theta$
- C. $\tan(180 + \theta)$
- D. All of these (Correct)

35) What is the formula for $\cos 2\theta$?

- A. $[1 - \tan^2(\theta)] / [1 + \tan^2(\theta)]$
- B. $1 - 2\sin^2(\theta)$
- C. Both A and B (Correct)

D. None of these

36) Evaluate: $\cos \theta + \tan \theta \sin \theta$

A. $\sec \theta$

B. $1/\cos \theta$

C. $\sqrt{1 - \sin^2(\theta)}$

D. All of these (Correct)

37) Solve: $(22/7) \cdot \sqrt{3}$

A. 5.44 (Correct)

B. 5.20

C. 5.85

D. 5.69

38) What is the cosine inverse of $\cos(0.5)$?

A. $1/6$

B. $1/2$ (Correct)

C. $1/3$

D. $1/4$

39) Probability of any event cannot have the value of:

A. $1/5$

B. $1/8$

C. $1/2$

D. $3/2$ (Correct)

40) If $A = \{1, 2, 3\}$, $B = \{0, 4, 5\}$ and $U = \{0, 3, 6\}$, then find $n(A \cup B)$.

A. 64 (Correct)

B. 8

C. 16

D. 32

41) When both nappes of a double-napped cone are intersected by a plane (not passing through the vertex), the cross section produces a/an:

A. Hyperbola (Correct)

B. Circle

C. Ellipse

D. Parabola

42) Find the value of $\cos[(\tan^{-1})(-1)]$.

A. 0.766

B. 0.707 (Correct)

C. 0.500

D. 0.087

43) Evaluate: $\tan(\theta/2)$

- A. $\sqrt{(1-\cos \theta)/(1+\cos \theta)}$
- B. $1/\cot(\theta/2)$
- C. $\tan(180+\theta/2)$
- D. All of these (Correct)

44) Evaluate: $[\tan^{-1}][1/\sqrt{3}]$

- A. $\pi/6$ radians
- B. $\pi/3$ radians
- C. $13\pi/6$ radians
- D. Both A and C (Correct)

45) Find the distance AB between the two points: A(3,1) and B(-2,-4).

- A. $\sqrt{50}$ (Correct)
- B. $\sqrt{26}$
- C. $\sqrt{34}$
- D. $\sqrt{10}$

46) What are three AMs between -18 and 4?

- A. 12.5, 7 and 1.5
- B. AM can't be found between a negative and a positive number
- C. -12.5, -7 and -1.5 (Correct)
- D. 1, 2 and 3

47) Find the sum: $1+3+5+\dots+(2n+1)$

- A. n^2 (Correct)
- B. $\ln e^2$
- C. 2^n
- D. n^e

48) What is the domain of $\tan x$?

- A. $\mathbb{R} - (2n+1)(\pi/2)$ where 'n' cannot be zero
- B. $\mathbb{R} - (2n+1)(\pi/2)$ where 'n' can be zero (Correct)
- C. $\mathbb{R} - n(\pi)$ where 'n' cannot be zero
- D. \mathbb{R}

49) Which one of the following pairs has the same period?

- A. Tangent function and cotangent function (Correct)
- B. Sine function and tangent function
- C. Cosine function and cotangent function
- D. Cosecant function and tangent function

50) 30 degrees, 45 minutes and 47 seconds are equal to _____ degrees:

- A. 30.56
- B. 30.66

- C. 30.67
- D. 30.86 (Correct)

51) Tickets numbered 1 to 20 are mixed up and then a ticket is drawn at random. What is the probability that the ticket drawn has a number which is a multiple of 3 or 5?

- A. $\frac{1}{2}$
- B. $\frac{2}{5}$
- C. $\frac{8}{15}$
- D. $\frac{9}{20}$ (Correct)

52) If α and β are the roots of the equation $x^2 - x + 1 = 0$, then find 2α and 2β .

- A. $1 + \sqrt{3}i$, $1 - \sqrt{3}i$ (Correct)
- B. only i
- C. Impossible to determine
- D. i and $-i$

53) If $A = \{a, b, c\}$ then the number of possible subsets is:

- A. 3
- B. 8 (Correct)
- C. 6
- D. None of these

54) How many 6-digit numbers can be formed without repeating any digit from the digits 0, 1, 2, 3, 4 and 5?

- A. 120
- B. 720 (Correct)
- C. 96
- D. 4920

55) If a parabola has an equation of $y^2 = 4x$, then find its focus.

- A. (1,0) (Correct)
- B. (0,1)
- C. (4,0)
- D. (0,4)

56) Any line parallel to x-axis has a slope of:

- A. 0 (Correct)
- B. infinity
- C. 1
- D. -1

57) The product of all the three cube roots of unity is:

- A. 1 (Correct)
- B. -1

- C. $-1+\sqrt{3}i$
- D. 0

58) $\frac{2}{3}$ is a/an _____ number.

- A. Irrational
- B. Rational
- C. Positive
- D. Both B and C (Correct)

59) How many radians are there in a degree?

- A. 0.07145 (Correct)
- B. 0.06250
- C. 0.06145
- D. 0.07135

60) Which one of the following things a hyperbola has?

- A. One focus and two directrices
- B. Two foci and two directrices (Correct)
- C. Two foci and one directrix
- D. None of these

61) A line segment that touches two points on the outside of the circle but doesn't pass through the center is called:

- A. Chord (Correct)
- B. Diameter
- C. Radius
- D. None of these

62) In a right-angled triangle, if a median drawn from the right angle to the hypotenuse has a length of 6 meters, then what is the length of the hypotenuse?

- A. 12 meters (Correct)
- B. 6 meters
- C. 3 meters
- D. 36 meters

63) If we have a function $f(x,y)=c$, then we differentiate it using the method of:

- A. Chain Rule
- B. Implicit differentiation (Correct)
- C. Product Rule
- D. Newton's method

64) The sum of coefficients in the expansion of $(x+y)^5$ is:

- A. 128
- B. 64
- C. 32 (Correct)

D. 16

65) If the sum of two consecutive integers is 'x', then what is the product of them?

A. $(x^2-1)/4$ (Correct)

B. $(x^2-1)/2$

C. x^2-1

D. None of these

66) What fraction is the result of the sum of the series: $0.2+0.02+0.002\ldots$

A. $1/3$

B. $1/6$

C. $2/9$ (Correct)

D. $1/7$

67) Differentiate 'sin 2x' with respect to x.

A. $2\cos 2x$

B. $2\sin 2x$

C. $2[1-2[\sin^2(x)]]$

D. Both A and C (Correct)

68) Men and women are in a ratio of P:Q. What is the percentage of men?

A. $P/P+Q$ (Correct)

B. $Q/P+Q$

C. $100/P+Q$

D. 50/50

69) Which of the following is the biggest number?

A. 1

B. $2*\sqrt{2}$

C. $3*\sqrt{3}$

D. $4*\sqrt{4}$ (Correct)

70) What is the geometric mean of 32 and 64?

A. $32*\sqrt{2}$

B. $\sqrt{32*64}$

C. Geometric mean of positive numbers isn't possible to determine

D. Both A and B (Correct)

71) Differentiate $\ln(e)$ with respect to 'x'.

A. $1/e$

B. 0 (Correct)

C. $1/x$

D. e

72) Evaluate: $\cos x * \sin x * \tan x * \cot x * \csc x$

- A. $\cos x$
- B. $1/\sec x$
- C. Both A and B (Correct)
- D. $\sin x$

73) Evaluate: $w^{-23} + w^{-28}$

- A. -1 (Correct)
- B. 1
- C. w
- D. w^2

74) The derivate of $f(x)$ with respect to 'x' is defined as:

- A. The rate of change in $f(x)$ with respect to 'x' (Correct)
- B. The increase in the relevance rate of $f(x)$ with respect to 'x'
- C. The decrease in the relevance rate of $f(x)$ with respect to 'x'
- D. None of these

75) Which one of the following is the additive inverse for $2 + \sqrt{3}$?

- A. $\sqrt{3}$
- B. $-2 + \sqrt{3}$
- C. $-2 - \sqrt{3}$ (Correct)
- D. $2 + \sqrt{3}$

76) What are the angles of an equilateral triangle?

- A. 45 degrees, 45 degrees and 90 degrees
- B. 45 degrees, 90 degrees and 45 degrees
- C. 120 degrees, 30 degrees and 30 degrees
- D. 60 degrees, 60 degrees and 60 degrees (Correct)

77) If a square has a side of 2 units, then what is the length of its diagonal?

- A. $2\sqrt{2}$ (Correct)
- B. 8
- C. 4
- D. 16

78) In an ellipse, what is the name for the line through the focus and perpendicular to the major axis ending at the ellipse?

- A. Focal chord
- B. Minor axis
- C. Latus rectum (Correct)
- D. Vertical asymptote

79) The length of all the sides of a square and an equilateral triangle is 5 units. What is the ratio of the area of the square to the area of the triangle?

- A. $8/\sqrt{3}$

- B. $[8\sqrt{3}]/5$
- C. $4/\sqrt{3}$ (Correct)
- D. $\sqrt{3}/8$

80) Two figures having the same shape but different sizes are called:

- A. Congruent figures
- B. Similar figures (Correct)
- C. Equal figures
- D. All of these

81) Evaluate: $\cos(-\theta) \cdot \cos(-\theta) \cdot [-\cos(\theta)] \cdot \cos(\theta) \cdot [-\cos(-\theta)]$

- A. $[\cos^5](\theta)$ (Correct)
- B. $-[\cos^5](\theta)$
- C. $[\cos^3](\theta)$
- D. $\cos(\theta)$

82) Evaluate: $[\sin^{-1}][3/5]$

- A. $[\cos^{-1}][4/5]$
- B. $[\sec^{-1}][5/4]$
- C. $[\csc^{-1}][5/3]$
- D. All of these (Correct)

83) What is the period of $\sin 3x$?

- A. $(2\pi)/3$ (Correct)
- B. 2π
- C. 3π
- D. $(3\pi)/2$

84) What is the formula of $\cos 3\alpha$?

- A. $\cos 2\alpha \cdot \cos \alpha$
- B. $4[\cos^3](\alpha) - 3\cos \alpha$ (Correct)
- C. $(1 + \cos \alpha)/\sin \alpha$
- D. Both A and C

85) Differentiate 3^{2x} with respect to 'x'.

- A. $2 \cdot \ln 2 \cdot (3^{2x})$ (Correct)
- B. $\ln 2 \cdot (3^{2x})$
- C. 3^{2x}
- D. $2x/3$

86) Find the integral with respect to x: $e^x/(e^x+1)$

- A. $\ln |e^x+1| + c$ (Correct)
- B. $\ln |e^x| + c$
- C. Impossible to determine
- D. $e^x + c$

87) If two coordinates of a rectangle are present in the first quadrant, then which one of the following coordinates is NOT to be of that rectangle?

- A. (2, 8)
- B. (2, -8)
- C. (8, -2)
- D. (-2, -8) (Correct)

88) Calculate the exact value of the decimal 0.4545...

- A. $\frac{5}{11}$ (Correct)
- B. $\frac{50}{11}$
- C. $\frac{500}{11}$
- D. $\frac{5000}{11}$

89) What is the cosine inverse of $\cos(-\frac{1}{2})$?

- A. $-\frac{1}{2}$ (Correct)
- B. $\frac{1}{2}$
- C. $\frac{1}{4}$
- D. $(2\pi)/3$ radians

90) An equation of a parabola is $(x-2)^2=4(y+2)$, then its vertex is:

- A. (2, -2) (Correct)
- B. (-2, 2)
- C. (0, 0)
- D. Missing information

91) If 'x' is real, then which one of the following is an odd function?

- A. $-\sin(x)$ (Correct)
- B. $-\cos(x)$
- C. $|x|$
- D. $(e^x-1)/(e^x+1)$

92) If $\cos \theta = 1$, then what is the possible value of θ ?

- A. 0 degrees
- B. 360 degrees
- C. 720 degrees
- D. All of these are possible (Correct)

93) If an equation of hyperbola is: $x^2/4 - y^2/9 = 1$, then find its eccentricity.

- A. $\sqrt{13}/4$ (Correct)
- B. $9/4$
- C. $\sqrt{5}/4$
- D. $\sqrt{9} \cdot \sqrt{5}$

94) Every homogenous second degree equation $ax^2+2hxy+by^2$ represents a pair of lines through the origin. When are these lines coincident?

- A. $(a*b) < h^2$
- B. $h^2 = 0$
- C. $h^2 < (a*b)$
- D. $h^2 = a*b$ (Correct)

95) Which one of the following is the real part of the complex number: $6(2-3i)$?

- A. 2
- B. 12 (Correct)
- C. -3
- D. 6

96) Simplify: $(1+\tan x)/(1-\tan x)$

- A. $\tan(45+x)$ (Correct)
- B. Can't be further simplified
- C. $\tan(45-x)$
- D. $\tan(x+1)$

97) If in a triangle, $\alpha=49$ degrees, $b=5$ inches and $c=7$ inches, then what is the length of 'a'?

- A. 5.29 (Correct)
- B. 7.31
- C. 12.07
- D. 9.65

98) The equation which doesn't change by replacing 'x' with '1/x' is called:

- A. Linear
- B. Quadratic
- C. Proportional
- D. None of these (Correct)

99) Differentiate $\tan[\sqrt{x}]$ with respect to 'x'.

- A. $[\sec^2][x]/[2\sqrt{x}]$
- B. $[\sec^2][\sqrt{x}]/[2\sqrt{x}]$
- C. $[\sec^2][\sqrt{x}]/[2\sqrt{x}]$ (Correct)
- D. None of these

100) Which one of the following is the same as $\sin(75)$?

- A. $[\sqrt{3}+1]/\sqrt{8}$ (Correct)
- B. It is impossible to determine
- C. $[\sqrt{3}-1]/\sqrt{8}$
- D. $[\sqrt{3}+1]/8$