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MATHS
QUIZ 2025

Grade 11-12

Q. 1 **Which graph represents a function?**

A. A circle
B. A vertical line
C. A parabola ($y = x^2$)
D. An ellipse

Q. 2 **In any triangle, the sum of the lengths of any two sides is:**

A. Smaller than the third side
B. Equal to the third side
C. Greater than the third side
D. A multiple of the third side

Q. 3 **If two rows of a determinant are proportional, then its value is:**

A. Positive
B. Negative
C. Zero
D. Non-zero

Q. 4 **A system of equations with infinitely many solutions is called:**

A. Inconsistent
B. Independent
C. Dependent
D. Contradictory

Q. 5 **Which quadrilateral is always cyclic?**

A. Square
B. Rectangle
C. Any rectangle
D. Rhombus

Q. 6 **Which property is NOT required for an equivalence relation?**

A. Reflexivity
B. Symmetry
C. Transitivity
D. Antisymmetry

Q. 7 **The fundamental theorem of calculus connects:**

A. Algebra and Geometry
B. Differentiation and Integration
C. Trigonometry and Calculus
D. Matrices and Vectors

Q. 8 **Which is NOT a property of variance?**

A. It is non-negative
B. It is always less than or equal to the mean
C. It is zero if all values are equal
D. It measures the spread of data

Q. 9 **The imaginary unit i is defined as:**

A. -1
B. -i
C. v(-1)
D. 1/i

Q. 10 **Which logarithm property states: log(ab) = log a + log b?**

A. Quotient Law
B. Product Law
C. Power Law
D. Change of Base Law

Q. 11 **A polygon with 8 sides is called:**

A. Heptagon
B. Octagon
C. Nonagon
D. Decagon

Q. 12 **A unit vector is defined as a vector with:**

A. |a| = 0
B. |a| = 2
C. |a| = 1
D. |a| = -1

Q. 13 **The range of the function y = cos x is:**

A. (0, 8)
B. [-1, 1]
C. (-8, 8)
D. [0, 8)

Q. 14 **Which statement about the tangent function is true?**

A. It is always continuous
B. It is undefined at odd multiples of p/2
C. Its range is [-1, 1]
D. It is an even function

Q. 15 **In De Moivre's Theorem, (cos + i sin)n is equal to:**

A. cos n + i sin n
B. sin n + i cos n
C. cos n + i sin n
D. cos + i sin

Q. 16 **The logarithmic function is the inverse of:**

A. Exponential function
B. Linear function
C. Quadratic function
D. Cubic function

Q. 17 **Which relation is reflexive?**

A. a < a
B. a ? a
C. a = a
D. a > a

Q. 18 **A number is divisible by 9 if:**

A. The number ends with 9
B. The sum of its digits is divisible by 9
C. The number ends with 0
D. The number is prime

Q. 19 **Which conic section has an eccentricity of 0?**

A. Hyperbola
B. Parabola
C. Circle
D. Ellipse

Q. 20 **Which set is countable?**

A. Real numbers
B. Irrational numbers
C. Natural numbers
D. Points on a line

Q. 21 **Which of the following is a discrete random variable?**

A. Weight of a student
B. Number of questions on a test
C. Temperature
D. Time

Q. 22 **Which function is not bounded?**

A. sin x
B. cos x
C. x^2
D. tan□¹x

Q. 23 **A sample is called unbiased if:**

A. It favors the population
B. It ignores data
C. It represents the population fairly
D. It is partial

Q. 24 **The limit of sin(x)/x as x approaches 0 is:**

A. 0
B. ∞
C. 1
D. Undefined

Q. 25 **The solution of |x| = a, where a > 0, is:**

A. x = a only
B. x = -a only
C. x = ±a
D. No solution

Q. 26 **Which trigonometric identity is correct?**

A. $\sin^2 - \cos^2 = 1$
B. $\sin^2 + \tan^2 = 1$
C. $\sin^2 + \cos^2 = 1$
D. $1 + \cos^2 = \sin^2$

Q. 27 **Which is true about odd functions?**

A. f(-x) = f(x)
B. f(-x) = -f(x)
C. They are symmetric about the y-axis
D. cos x is an example

Q. 28 **What is the additive identity in the set of real numbers?**

A. 1
B. -1
C. 0
D. 8

Q. 29 **The integral of 1/x with respect to x is:**

A. e^x
B. ln |x|
C. $x^2/2$
D. cos x

Q. 30 **Which function is even?**

A. $f(x) = x^3$
B. f(x) = sin x
C. f(x) = cos x
D. f(x) = tan x

Q. 31 **Which of the following does NOT represent a function?**

A. y = 2x
B. y = vx
C. $x^2 + y^2 = 1$
D. y = log x

Q. 32 **The graph of $y = x^2$ is symmetric about the:**

A. x-axis
B. y-axis
C. Line y = x
D. Origin

Q. 33 **What is the slope of the tangent at the vertex of the parabola $y = x^2$?**

A. 1
B. -1
C. 0
D. 2

Q. 34 **The correlation coefficient always lies between:**

A. -2 and 2
B. 0 and 1
C. -1 and 1
D. -8 and 8

Q. 35 **Which of the following is NOT a vector quantity?**

A. Force
B. Velocity
C. Speed
D. Acceleration

Q. 36 **Two vectors are perpendicular if their dot product is:**

A. 0
B. 1
C. > 0
D. < 0

Q. 37 **De Moivre's Theorem states that (cos + i sin)n equals:**

A. cos n + i sin n
B. sin n + i cos n
C. cos n + i sin n
D. cos + i sin

Q. 38 **The derivative of a constant function is:**

A. 1
B. x
C. 0
D. Undefined

Q. 39 **In calculus, dy/dx is called the:**

A. Integral
B. Function
C. Derivative
D. Limit

Q. 40 **A function that is both one-to-one and onto is called:**

A. Injective
B. Surjective
C. Bijective
D. Constant

Q. 41 **Which is true about the diagonals of a rectangle?**

A. They are unequal and perpendicular
B. They are unequal and do not bisect each other
C. They are equal and bisect each other
D. They are equal and perpendicular

Q. 42 **If a set has 3 elements, how many elements does its power set have?**

A. 3
B. 6
C. 8
D. 9

Q. 43 **Which relation is always symmetric?**

A. is less than
B. is greater than
C. is equal to
D. divides

Q. 44 **The slope of a line parallel to the x-axis is:**

A. 1
B. Undefined
C. 0
D. Infinite

Q. 45 The identity element for addition in real numbers is:

A. 1
B. -1
C. 0
D. None

Q. 46 Which set operation is idempotent?

A. A ? B
B. A n B
C. A ? A = A
D. A n B = U

Q. 47 The determinant of an identity matrix is always:

A. 0
B. -1
C. 1
D. 2

Q. 48 A function whose graph is a straight line is called:

A. Quadratic function
B. Cubic function
C. Linear function
D. Constant function

Q. 49 Which function is strictly increasing on its entire domain?

A. y = cos x
B. y = -x
C. y = e^x
D. $y = -x^2$

Q. 50 The range of the function y = sin x is:

A. (0, 8)
B. [-1, 1]
C. R
D. [0, 8)

Q. 51 Which function has a restricted domain in real numbers?

A. y = x
B. $y = x^3$
C. y = 1/x
D. y = 2x + 3

Q. 52 The line y = 0 is known as the:

A. x-axis
B. y-axis
C. Line y = x
D. Origin

Q. 53 The Fundamental Theorem of Calculus connects:

A. Algebra and Geometry
B. Differentiation and Integration
C. Trigonometry and Calculus
D. Matrices and Vectors

Q. 54 The domain of the function y = vx is:

A. All real numbers
B. Negative numbers
C. x = 0
D. None

Q. 55 The scalar triple product [a b c] represents:

A. A vector
B. The volume of a parallelepiped
C. The area of a triangle
D. A scalar function

Q. 56 **Which test is used to determine the convergence of an infinite series?**

A. Mean Value Test
B. Ratio Test
C. Derivative Test
D. Function Test

Q. 57 **Which method is used to evaluate limits of the form 0/0?**

A. Product Rule
B. L'Hôpital's Rule
C. Chain Rule
D. Quotient Rule

Q. 58 **Which is always true for any real number a?**

A. $a^2 < 0$
B. $a^2 = 0$
C. $x \geq 0$
D. $a^2 = 0$

Q. 59 **Which set law is expressed by (A ? B)' = A' n B'?**

A. Idempotent Law
B. Associative Law
C. De Morgan's Law
D. Absorption Law

Q. 60 **What is the slope of the line y = 2x + 3?**

A. 3
B. 2
C. -2
D. 0

Q. 61 **The median of a data set represents the:**

A. Most frequent value
B. Middle value
C. Average value
D. Largest value

Q. 62 **Which statement correctly describes irrational numbers?**

A. Can be written as a ratio of integers
B. Have a terminating decimal expansion
C. Never terminate nor repeat in decimal form
D. Are always prime numbers

Q. 63 **Which logic law states: ¬(P ^ Q) = ¬P V ¬Q?**

A. Absorption Law
B. Idempotent Law
C. De Morgan's Law
D. Associative Law

Q. 64 **The number of ways to arrange n distinct objects is given by:**

A. n
B. n^2
C. n!
D. 2n

Q. 65 **If the square of a number is even, then the number itself must be:**

A. Odd
B. Even
C. Prime
D. Composite

Q. 66 **Which statement about prime numbers is correct?**

A. All even numbers are prime
B. All odd numbers are prime
C. Every prime number greater than 2 is odd
D. 1 is a prime number

Q. 67 **Which property is illustrated by a + (-a) = 0?**

A. Multiplicative Inverse
B. Identity
C. Additive Inverse
D. Zero Property

Q. 68 **What is the value of $\sin^2 + \cos^2$?**

A. 0
B. 2
C. 1
D. -1

Q. 69 **A quadratic equation has equal roots when:**

A. $b^2 - 4ac < 0$
B. $b^2 - 4ac > 0$
C. $b^2 - 4ac = 0$
D. $b^2 - 4ac = 1$

Q. 70 **What is the derivative of f(x) = ln(x)?**

A. $1/x^2$
B. 1/x
C. x
D. e^x

Q. 71 **The inverse trigonometric function of sin(x) is:**

A. arcsin(x)
B. arccos(x)
C. arctan(x)
D. arccot(x)

Q. 72 **Which property of determinants is true?**

A. If two rows are identical, the determinant ? 0
B. If two rows are identical, the determinant = 0
C. The determinant is always positive
D. The determinant equals the sum of the diagonal elements

Q. 73 **Which is always true for a parallelogram?**

A. All sides are equal
B. All angles are 90°
C. Opposite sides are parallel
D. The diagonals are equal

Q. 74 **What is the derivative of ln(x)?**

A. $1/x^2$
B. 1/x
C. x
D. e^x

Q. 75 **A bijective function:**

A. Has no inverse
B. Has many inverses
C. Has a unique inverse
D. Has an undefined inverse

Q. 76 **The sum of the interior angles of a pentagon is:**

A. 360°
B. 540°
C. 720°
D. 900°

Q. 77 **The perpendicular drawn from the center of a circle to a chord:**

A. Bisects the circle
B. Bisects the chord
C. Becomes the diameter
D. Is tangent to the chord

Q. 78 **In a probability experiment:**

A. The sample space is empty
B. The sample space has infinite outcomes
C. Every outcome belongs to the sample space
D. The sample space has no subsets

Q. 79 **A system of equations with a unique solution is called:**

A. Inconsistent
B. Independent
C. Dependent
D. Represented by parallel lines

Q. 80 **If two parallel lines are cut by a transversal, then alternate interior angles are:**

A. Unequal
B. Supplementary
C. Equal
D. 90°

Q. 81 **If two lines are perpendicular, the product of their slopes is:**

A. 1
B. -1
C. 0
D. Undefined

Q. 82 **A definite integral represents:**

A. The slope of a tangent line
B. The area under a curve
C. Always a positive value
D. An infinite value

Q. 83 **The standard deviation is always:**

A. Negative
B. Zero
C. Non-negative
D. Undefined

Q. 84 **The graph of $y = x^2$ is a:**

A. Straight line
B. Parabola
C. Circle
D. Ellipse

Q. 85 **The probability of an impossible event is:**

A. 1
B. 0
C. 0.5
D. Undefined

Q. 86 **The range of the function y = sin x is:**

A. (-8, 8)
B. [-1, 1]
C. [0, 8)
D. [0, 1]

Q. 87 **A line that touches a circle at exactly one point is:**

A. Chord
B. Secant
C. Tangent
D. Radius

Q. 88 **The fundamental principle of counting is primarily used in:**

A. Geometry
B. Trigonometry
C. Permutations & Combinations
D. Calculus

Q. 89 **Which distribution has the mean, median, and mode all equal?**

A. Binomial
B. Poisson
C. Normal
D. Exponential

Q. 90 **Which sequence is geometric?**

A. 2, 4, 6, 8
B. 1, 2, 5, 8
C. 1, 2, 4, 8
D. 5, 7, 9, 11

Q. 91 **Which is NOT a valid probability value?**

A. 0
B. 1
C. -0.5
D. 0.8

Q. 92 **The second derivative of a function gives information about its:**

A. x-intercept
B. Concavity
C. Domain
D. Symmetry

Q. 93 **The intersection of two disjoint sets is always:**

A. The universal set
B. The empty set
C. Either the null set or universal set
D. A singleton set

Q. 94 **The domain of the function y = log x is:**

A. R
B. [1, 8)
C. (0, 8)
D. (-8, 8)

Q. 95 **Which statement about symmetry is correct?**

A. All functions are symmetric
B. Odd functions are symmetric about the y-axis
C. Even functions are symmetric about the y-axis
D. Odd functions have no symmetry

Q. 96 **Which statement is always true for the probability of an event?**

A. Probability < 0
B. Probability > 1
C. 0 = Probability = 1
D. Probability = -1

Q. 97 **The inverse function of cosine is:**

A. sine
B. arccosine
C. secant
D. cotangent

Q. 98 **What is the value of the logarithm of 1 to any base?**

A. 1
B. 0
C. 8
D. Undefined

Q. 99 **The angle between the tangent and the radius at the point of contact on a circle is:**

A. 0°
B. 90°
C. 180°
D. 45°

Q. 100 One-to-one correspondence is a property of:

A. Onto functions only
B. Bijective functions
C. Many-to-one functions
D. Reflexive relations

Q. 101 The complement of an event A is denoted by:

A. A U B
B. A n B
C. A'
D. Ø

Q. 102 The general solution to the differential equation dy/dx = ky is:

A. y = kx + C
B. y = Ce^(kx)
C. y = sin(kx)
D. y = x^k

Q. 103 Which of the following equations does NOT represent a function?

A. y = 2x
B. $y = x^2$
C. $x^2 + y^2 = r^2$
D. y = tan x

Q. 104 Which quadrilateral always has perpendicular diagonals?

A. Rectangle
B. Parallelogram
C. Rhombus
D. Trapezium

Q. 105 A set that contains no elements is called:

A. Singleton set
B. Universal set
C. Null set
D. Finite set

Q. 106 The set of real roots of the equation $x^2 + 1 = 0$ is:

A. {0}
B. {1}
C. Ø
D. R

Q. 107 Which conic section has an eccentricity greater than 1?

A. Circle
B. Ellipse
C. Parabola
D. Hyperbola

Q. 108 Which property defines the additive inverse?

A. a + 0 = a
B. a × 1 = a
C. a + (-a) = 0
D. a × 0 = 0

Q. 109 Which property is illustrated by a × 1 = a?

A. Additive Identity
B. Multiplicative Identity
C. Zero Property
D. Inverse Property

Q. 110 The nth term of an arithmetic sequence is given by:

A. ar^(n-1)
B. a + r(n - 1)
C. a + (n - 1)d
D. a - (n - 1)d

Q. 111 **A sequence that approaches a fixed value as n approaches infinity is called:**

A. Divergent
B. Convergent
C. Infinite
D. Random

Q. 112 **The Mean Value Theorem states that for a function continuous on [a,b] and differentiable on (a,b), there exists c in (a,b) such that:**

A. f'(c) = 0
B. f'(c) = [f(b)-f(a)]/(b-a)
C. f(c) = 0
D. f'(c) is undefined

Q. 113 **The scalar triple product [a b c] represents:**

A. A vector
B. The volume of a parallelepiped
C. The area of a triangle
D. A scalar function

Q. 114 **Which is true about standard deviation?**

A. It can be negative
B. It is always 0
C. It is always non-negative
D. It is always 1

Q. 115 **Which of the following functions is one-to-one?**

A. $y = x^2$
B. $y = 2x + 1$
C. $y = |x|$
D. $y = \cos x$

Q. 116 **Which of the following represents a hyperbola?**

A. $x^2 + y^2 = 1$
B. $x^2/a^2 - y^2/b^2 = 1$
C. $y = x^2$
D. $x^2/a^2 + y^2/b^2 = 1$

Q. 117 **A polynomial of degree 2 is called:**

A. Linear
B. Quadratic
C. Cubic
D. Constant

Q. 118 **A function f is continuous at a point c if:**

A. f(c) is defined
B. The limit of f(x) as $x \to c$ exists
C. f(c) is defined, the limit exists, and they are equal
D. f'(c) exists

Q. 119 **A function f is continuous at a point c if:**

A. f(c) is defined
B. The limit of f(x) as $x \to c$ exists
C. f(c) is defined, the limit exists, and they are equal
D. f'(c) exists

Q. 120 **A relation is called a function if:**

A. Every element has many images
B. No element has an image
C. Every element has a unique image
D. Some elements have two images

Q. 121 **The value of cos(90°) is:**

A. 1
B. -1
C. 0
D. Undefined

Q. 122 **Which is NOT a property of derivatives?**

A. Linearity
B. Product Rule
C. Chain Rule
D. Reflexivity

Q. 123 **Which property is illustrated by a(b + c) = ab + ac?**

A. Commutative
B. Associative
C. Distributive
D. Identity

Q. 124 **Which statement is true about a convex polygon?**

A. All diagonals lie outside the polygon
B. All diagonals lie inside the polygon
C. Some interior angles are greater than 180°
D. All interior angles equal 180°

Q. 125 **The variance of a constant is always:**

A. 1
B. 2
C. 0
D. 8

Q. 126 **Which statement about functions is true?**

A. Every relation is a function
B. One element of the domain can map to many elements of the range
C. Each element of the domain has exactly one image
D. A function has no inverse

Q. 127 **Which function has no inverse?**

A. A one-to-one function
B. A bijective function
C. A many-to-one function
D. An onto function

Q. 128 **Which function is periodic?**

A. $y = x$
B. $y = x^2$
C. $y = \sin x$
D. $y = \ln x$

Q. 129 **Which property is used in: (a + b) + c = a + (b + c)?**

A. Commutative
B. Associative
C. Distributive
D. Identity

Q. 130 **The polar coordinates (r,) are related to rectangular coordinates (x,y) by:**

A. x = rcos , y = rsin
B. x = rcos , y = rsin
C. x = rsin , y = rcos
D. x = r , y = r

Q. 131 **The complement of the universal set is:**

A. The universal set
B. The null set
C. The null set
D. An infinite set

Q. 132 **Which set is uncountable?**

A. Integers
B. Rational numbers
C. Real numbers
D. Natural numbers

Q. 133 What is the contrapositive of "If n is prime, then n is odd"?

A. If n is not odd, then n is not prime
B. If n is not odd, then n is not prime
C. If n is odd, then n is prime
D. If n is prime, then n is odd

Q. 134 The general solution of the differential equation dy/dx = ky is:

A. y = kx + C
B. y = Ce^(kx)
C. y = sin(kx)
D. y = x^k

Q. 135 Which is the complement law in set theory?

A. A U Ø = A
B. A U A' = U
C. A n A = A
D. A n Ø = Ø

Q. 136 The exponential function e^x is always:

A. Negative
B. Positive
C. Zero
D. Undefined

Q. 137 Which statement is true about the sum of two odd numbers?

A. Odd + Odd = Odd
B. Odd + Odd = Even
C. Odd + Odd = Prime
D. Odd + Odd = Multiple of 3

Q. 138 Which statement about circles is always true?

A. All radii are unequal
B. All radii are equal
C. Diameter < Radius
D. Circumference = Radius

Q. 139 Which logic law states: P V (Q ^ P) = P?

A. Distributive Law
B. Absorption Law
C. De Morgan's Law
D. Idempotent Law

Q. 140 Which of the following graphs is symmetric about the origin?

A. $y = x^2$
B. y = |x|
C. $y = x^3$
D. y = cos x

Q. 141 The method of integration by parts is based on:

A. Chain Rule
B. Product Rule
C. Quotient Rule
D. Power Rule

Q. 142 The imaginary unit i is defined as:

A. v-1
B. -1
C. v-1
D. -i

Q. 143 In probability theory, which term measures randomness or uncertainty?

A. Mean
B. Variance
C. Entropy
D. Median

Q. 144 The number of ways to arrange n distinct objects is:

A. n
B. n^2
C. n!
D. 2n

Q. 145 In an arithmetic sequence:

A. The ratio is constant
B. The difference is constant
C. The common difference is constant
D. The terms are prime numbers

Q. 146 A quadrilateral with both pairs of opposite sides parallel is:

A. Trapezium
B. Kite
C. Parallelogram
D. Rhombus

Q. 147 A line that intersects a circle at two distinct points is called:

A. Tangent
B. Secant
C. Chord
D. Diameter

Q. 148 A system of equations with no solution is called:

A. Consistent
B. Dependent
C. Inconsistent
D. Homogeneous

Q. 149 A matrix with an equal number of rows and columns is called:

A. Rectangular matrix
B. Square matrix
C. Identity matrix
D. Null matrix

Q. 150 What is the eccentricity of a parabola?

A. 0
B. <1
C. >1
D. 1

Q. 151 Which of the following is an equivalence relation?

A. is less than
B. is greater than
C. is not equal to
D. is equal to

Q. 152 The measure of central tendency most affected by extreme values is:

A. Median
B. Mode
C. Mean
D. None

Q. 153 The mean value theorem states that for a function continuous on [a,b] and differentiable on (a,b), there exists c in (a,b) such that:

A. f'(c) = 0
B. f'(c) = (f(b) - f(a))/(b - a)
C. f(c) = 0
D. f'(c) is undefined

Q. 154 A bijective function is:

A. Only one-to-one
B. Only onto
C. Both one-to-one and onto
D. Neither one-to-one nor onto

Q. 155 **The function y = cos x is:**

A. An odd function
B. An even function
C. Neither even nor odd
D. Both even and odd

Q. 156 **Which of the following is NOT a property of real numbers?**

A. Associative
B. Commutative
C. Distributive
D. Reflexive

Q. 157 **The union of any set A with the empty set is:**

A. The set A itself
B. The universal set
C. The null set
D. A singleton set

Q. 158 **Which statement is always true about odd numbers?**

A. Odd × Odd = Even
B. Odd × Odd = Odd
C. Odd × Even = Odd
D. Odd + Odd = Odd

Q. 159 **A triangle with all three sides equal is:**

A. Isosceles
B. Right angled
C. Equilateral
D. Scalene

Q. 160 **Which set law is: A n (B U C) = (A n B) U (A n C)?**

A. Idempotent Law
B. Absorption Law
C. Distributive Law
D. De Morgan's Law

Q. 161 **The slope (gradient) of a vertical line is:**

A. 0
B. 1
C. -1
D. Undefined

Q. 162 **The harmonic mean is always:**

A. Equal to arithmetic mean
B. Less than or equal to arithmetic mean
C. Greater than arithmetic mean
D. Undefined

Q. 163 **A necessary condition for a quadrilateral to be cyclic is:**

A. All sides are equal
B. All angles are 90°
C. Opposite angles are supplementary
D. Opposite sides are equal

Q. 164 **Which of the following is a continuous random variable?**

A. Number of boys in a class
B. Height of a student
C. Number of heads in 5 coin tosses
D. Number of pages in a book

Q. 165 **In statistics, the most frequently occurring value is the:**

A. Median
B. Mean
C. Mode
D. Range

Q. 166 **At which angle does the sine function achieve its maximum value?**

A. 0° B. 30°
C. 90° D. 180°

Q. 167 **Which is NOT true about even functions?**

A. They are symmetric about the y-axis B. f(-x) = f(x)
C. They are symmetric about the origin D. cos x is an example

Q. 168 **Which function is many-to-one?**

A. y = x **B. $y = x^2$**
C. $y = x^3$ D. y = 2x + 1

Q. 169 **Which is NOT a measure of dispersion?**

A. Range B. Standard deviation
C. Variance **D. Median**

Q. 170 **If a function is increasing on an interval, the slope of its tangent line is:**

A. Zero B. Negative
C. Positive D. Undefined

Q. 171 **The line y = mx + c intersects the y-axis at:**

A. (m, 0) B. (c, 0)
C. (0, c) D. (0, m)

Q. 172 **An ellipse has:**

A. One focus **B. Two foci**
C. Its center at infinity D. An axis that is a circle

Q. 173 **In three-dimensional space, the equation $x^2 + y^2 + z^2 = r^2$ represents:**

A. A cylinder **B. A sphere**
C. A plane D. A cone

Q. 174 **Which statement about a tangent to a circle is true?**

A. A tangent cuts the circle at two points **B. A tangent touches the circle at exactly one point**
C. A tangent passes through the center D. A tangent never touches the circle

Q. 175 **The roots of a quadratic equation are real and equal when the discriminant is:**

A. Negative B. Positive
C. Zero D. Undefined

Q. 176 **In any probability distribution, the sum of the probabilities of all outcomes is:**

A. 0 B. 1/2
C. 1 D. 8

Q. 177 **A transformation that preserves distances and angles is called:**

A. Shear
B. Isometry
C. Dilation
D. Scaling

Q. 178 **A circle is the locus of points that are:**

A. Collinear
B. Equidistant from a fixed point
C. Parallel
D. Random

Q. 179 **Which of the following is a separable differential equation?**

A. dy/dx = x + y
B. dy/dx = xy
C. dy/dx = sin(x+y)
D. dy/dx = e^(x+y)

Q. 180 **Which function is odd?**

A. f(x) = cos x
B. f(x) = sin x
C. f(x) = |x|
D. $f(x) = x^2$

Q. 181 **What is the slope of a horizontal line?**

A. 1
B. 8
C. 0
D. Undefined

Q. 182 **The slope of a line perpendicular to the x-axis is:**

A. 0
B. Undefined
C. 1
D. -1

Q. 183 **If two sets have no common elements, they are called:**

A. Equal sets
B. Disjoint sets
C. Universal sets
D. Finite sets

Q. 184 **The Binomial Theorem is applicable to:**

A. Only integers
B. Rational numbers
C. Any real exponent
D. Only natural numbers

Q. 185 **Which is NOT true about the tangent function?**

A. Its period is p
B. It is undefined at p/2
C. Its range is [-1, 1]
D. It is an odd function

Q. 186 **In probability, the sum of probabilities of all possible outcomes is:**

A. 0
B. 8
C. 1
D. -1

Q. 187 **In an arithmetic sequence:**

A. The ratio is constant
B. The common difference is constant
C. The product is constant
D. The terms are odd numbers

Q. 188 **Which is NOT a measure of central tendency?**

A. Mean
B. Median
C. Mode
D. Variance

Q. 189 **The determinant of an identity matrix is always:**

A. 0
B. -1
C. 1
D. 8

Q. 190 **The Cartesian product A × B represents:**

A. Union of A and B
B. Intersection of A and B
C. Ordered pairs from A and B
D. Difference of A and B

Q. 191 **The cross product of two vectors results in:**

A. A scalar quantity
B. A vector quantity
C. A matrix
D. A complex number

Q. 192 **The additive inverse of a number a is:**

A. 1/a
B. a
C. '-a
D. 0

Q. 193 **What is the derivative of a constant?**

A. 1
B. x
C. 0
D. 8

Q. 194 **The product of the roots of a quadratic equation $ax^2 + bx + c = 0$ is:**

A. -b/a
B. b/a
C. c/a
D. -c/a

Q. 195 **Which is generally NOT possible for a non-trivial relation?**

A. Reflexive
B. Symmetric
C. Transitive
D. Both antisymmetric and symmetric

Q. 196 **Which function is bounded between -1 and 1?**

A. y = x
B. $y = x^2$
C. y = sin x
D. y = e^x

Q. 197 **What is the y-intercept of the line y = 5x - 7?**

A. 5
B. -5
C. -7
D. 7

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