



# GRADE 11 & 12

1. The derivative of a constant is always:

- a) 1                                      b)  $x$                                       c) 0                                      d)  $\infty$

2. The function whose graph is a straight line is called:

- a) Quadratic function                      b) Cubic function                      c) **Linear function**                      d) Constant function

3. The logarithm of 1 to any base is:

- a) 1                                      b) 0                                      c)  $\infty$                                       d) Undefined

4. A polynomial of degree 2 is called:

- a) Linear                                      b) **Quadratic**                                      c) Cubic                                      d) Constant

5. The slope of a horizontal line is:

- a) 1                                      b)  $\infty$                                       c) 0                                      d) Undefined

6. The inverse trigonometric function of  $\sin(x)$  is:

- a)  **$\arcsin(x)$**                                       b)  $\arccos(x)$                                       c)  $\arctan(x)$                                       d)  $\operatorname{arccot}(x)$

7. A matrix with equal number of rows and columns is called:

- a) Rectangular                                      b) **Square**                                      c) Identity                                      d) Null

8. The additive identity in real numbers is:

- a) 1                                      b)  $-1$                                       c) 0                                      d)  $\infty$

9. A set with no element is called:

- a) Singleton                                      b) Universal                                      c) **Null set**                                      d) Finite set

10. The value of  $\sin^2\theta + \cos^2\theta$  is always:

- a) 0                                      b)  $\theta$                                       c) 2                                      d) **1**

11. The line which intersects a circle at two points is called:

- a) Tangent                                      b) **Secant**                                      c) Chord                                      d) Diameter

12. The fundamental principle of counting is used in:

- a) Geometry                                      b) Trigonometry  
c) **Permutations & Combinations**                                      d) Calculus

13. The binomial theorem is applicable to:

- a) Only integers                                      b) Rational numbers  
c) **Any real exponent**                                      d) Only natural numbers

14. 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

15. The solution of  $|x| = a$ , where  $a > 0$ , is:

- a)  $x = a$  only                                      b)  $x = -a$  only                                      c)  **$x = \pm a$**                                       d) No solution

16. The median of a data set represents:

- a) Most frequent value                      b) **Middle value**                      c) Average value                      d) Largest value

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

- a) Median                      b) Mode                      c) **Mean**                      d) None

18. The line  $y = mx + c$  intersects the y-axis at:

- a)  $(m, 0)$                       b)  $(c, 0)$                       c)  **$(0, c)$**                       d)  $(0, m)$

19. The integral of  $1/x$  is:

- a)  $e^x$                       b)  $\ln|x|$                       c)  $x^2/2$                       d)  $\cos x$

20. A triangle with all three sides equal is:

- a) Isosceles                      b) Right angled                      c) **Equilateral**                      d) Scalene

21. 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

22. The perpendicular drawn from the center of a circle to a chord:

- a) Bisects the circle                      b) **Bisects the chord**  
c) Becomes diameter                      d) Tangent to chord

23. The exponential function is always:

- a) Negative                      b) **Positive**                      c) Zero                      d) Undefined

24. In probability, the sum of probabilities of all possible outcomes is:

- a) 0                      b)  $\infty$                       c) **1**                      d)  $-1$

25. The domain of  $y = \sqrt{x}$  is:

- a) All real numbers                      b) Negative numbers                      c)  **$x \geq 0$**                       d) None

26. The graph of  $y = x^2$  is:

- a) Straight line                      b) **Parabola**                      c) Circle                      d) Ellipse

27. The additive inverse of a number  $a$  is:

- a)  $1/a$                       b)  $a$                       c)  **$-a$**                       d) 0

28. 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

29. The midpoint of a line segment divides it in the ratio:

- a) 2:1                      b) 1:2                      c) **1:1**                      d) 1:0s

30. The gradient of a vertical line is:

- a) 0                      b) 1                      c)  $-1$                       d) **Undefined**

31. The product of roots of a quadratic  $ax^2 + bx + c = 0$  is:

- a)  $-b/a$                       b)  $b/a$                       c)  **$c/a$**                       d)  $-c/a$

32. The Cartesian product  $A \times B$  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

33. The limit of  $\sin x / x$  as  $x \rightarrow 0$  is:

- a) 0                                      b)  $\infty$                                       c) 1                                      d) Undefined

34. If two lines are perpendicular, the product of their slopes is:

- a) 1                                      b)  $-1$                                       c) 0                                      d) Undefined

35. The  $n$ th term of an arithmetic sequence is given by:

- a)  $ar^{n-1}$                                       b)  $a + r(n - 1)$                                       c)  $a + (n - 1)d$                                       d)  $a - (n - 1)d$

36. The range of  $\sin x$  is:

- a)  $(-\infty, \infty)$                                       b)  $[-1, 1]$                                       c)  $[0, \infty)$                                       d)  $[0, 1]$

37. The variance of a constant is always:

- a) 1                                      b) 2                                      c) 0                                      d)  $\infty$

38. A polygon with 8 sides is called:

- a) Heptagon                                      b) Octagon                                      c) Nonagon                                      d) Decagon

39. The roots of a quadratic are real and equal when discriminant is:

- a) Negative                                      b) Positive                                      c) Zero                                      d) Undefined

40. The complement of an event A is denoted by:

- a)  $A \cup B$                                       b)  $A \cap B$                                       c)  $A'$                                       d)  $\emptyset$

41. A line touching a circle at exactly one point is:

- a) Chord                                      b) Secant                                      c) Tangent                                      d) Radius

42. The logarithmic function is the inverse of:

- a) Exponential function                                      b) Linear function  
c) Quadratic function                                      d) Cubic function

43. The correlation coefficient lies between:

- a)  $-2$  and  $2$                                       b)  $0$  and  $1$                                       c)  $-1$  and  $1$                                       d)  $-\infty$  and  $\infty$

44. A circle is a locus of points which are:

- a) Collinear                                      b) Equidistant from a fixed point  
c) Parallel                                      d) Random

45. In calculus,  $dy/dx$  is called:

- a) Integral                                      b) Function                                      c) Derivative                                      d) Limit

46. The standard deviation is always:

- a) Negative                                      b) Zero                                      c) Non-negative                                      d) Undefined

47. The function  $y = \cos x$  is:

- a) Odd function                                      b) Even function                                      c) Neither                                      d) Both

48. A function which is both one-to-one and onto is called:

- a) Injective                                      b) Surjective                                      c) Bijective                                      d) Constant

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

- a) Trapezium                                      b) Kite                                      c) Parallelogram                                      d) Rhombus

50. In statistics, the most frequently occurring value is:

- a) Median                      b) Mean                      c) **Mode**                      d) Range

51. If two sets have no common element, they are called:

- a) Equal sets                      b) **Disjoint sets**                      c) Universal sets                      d) Finite sets

52. The symmetry of  $y = x^2$  is about:

- a) x-axis                      b) **y-axis**                      c) Line  $y = x$                       d) Origin

53. The angle between the tangent and radius at the point of contact is:

- a)  $0^\circ$                       b)  **$90^\circ$**                       c)  $180^\circ$                       d)  $45^\circ$

54. The sum of interior angles of a pentagon is:

- a)  $360^\circ$                       b)  **$540^\circ$**                       c)  $720^\circ$                       d)  $900^\circ$

55. The inverse of a square matrix A is denoted by:

- a)  $|A|$                       b)  $\text{Adj } A$                       c)  **$A^{-1}$**                       d)  $A^T$

56. The determinant of an identity matrix is always:

- a) 0                      b) -1                      c) **1**                      d)  $\infty$

57. If  $A \subseteq B$  and  $B \subseteq A$ , then A and B are:

- a) Disjoint                      b) **Equal**                      c) Empty                      d) Infinite

58. A sequence that approaches a fixed value is called:

- a) Divergent                      b) **Convergent**                      c) Infinite                      d) Random

59. The line  $y = 0$  is known as:

- a) **x-axis**                      b) y-axis                      c) Line  $y = x$                       d) Origin

60. The value of  $\cos(90^\circ)$  is:

- a) 1                      b) -1                      c) **0**                      d) Undefined

61. If the sum of two odd numbers is always even, then which of the following is always true?

- a) Odd+Odd = Odd                      b) **Odd + Odd = Even**  
c) Odd+Odd = Prime                      d) Odd + Odd = Multiple of 3

62. A number divided by 9 leaves remainder 0. Which statement is true?

- a) Number ends with 9                      b) **Sum of digits is divisible by 9**  
c) Number ends with 0                      d) Number is prime

63. Which property explains:  $a(b + c) = ab + ac$ ?

- a) Commutative                      b) Associative                      c) **Distributive**                      d) Identity

64. If the square of a number is even, then the number itself is:

- a) Odd                      b) **Even**                      c) Prime                      d) Composite

65. Which statement is always true for probability?

- a) Probability  $< 0$                       b) Probability  $> 1$                       c)  **$0 \leq \text{Probability} \leq 1$**                       d) Probability  $= -1$

66. If a set has 3 elements, then its power set contains:

- a) 3 elements                      b) 6 elements                      c) **8 elements**                      d) 9 elements

67. In any triangle, the sum of two sides is always:

- a) Smaller than third side
- b) Equal to third side
- c) Greater than third side
- d) Multiple of third side

68. Which of the following functions is one-to-one?

- a)  $y = x^2$
- b)  $y = 2x + 1$
- c)  $y = |x|$
- d)  $y = \cos x$

69. The intersection of two disjoint sets is always:

- a) Universal set
- b) Empty set
- c) Null or Universal
- d) Singleton

70. 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"

71. Which statement about prime numbers is correct?

- a) All even numbers are prime
- b) All odd numbers are prime
- c) Every prime greater than 2 is odd
- d) 1 is prime

72. Which of the following graphs is symmetric about the origin?

- a)  $y = x^2$
- b)  $y = |x|$
- c)  $y = x^3$
- d)  $y = \cos x$

73. If a function is increasing, then slope of tangent line is:

- a) Zero
- b) Negative
- c) Positive
- d) Undefined

74. Which of the following is not a property of real numbers?

- a) Associative
- b) Commutative
- c) Distributive
- d) Reflexive

75. Which statement about irrational numbers is correct?

- a) Irrational number can be written as ratio of integers
- b) Irrational number terminates
- c) Irrational number never terminates or repeats
- d) Irrational number is always prime

76. In any probability distribution, the sum of probabilities of all outcomes is:

- a) 0
- b)  $1/2$
- c) 1
- d)  $\infty$

77. Which of the following is true about a convex polygon?

- a) All diagonals lie outside polygon
- b) All diagonals lie inside polygon
- c) Some angles  $> 180^\circ$
- d) All angles  $= 180^\circ$

78. Which is always true about arithmetic sequence?

- a) Ratio is constant
- b) Difference is constant
- c) Common difference is constant
- d) Terms are prime

79. Which logic statement is a tautology?

- a)  $P \vee \neg P$
- b)  $P \wedge \neg P$
- c)  $P \Rightarrow Q$
- d)  $P \wedge Q$

80. Which sequence is geometric?

- a) 2, 4, 6, 8
- b) 1, 2, 5, 8
- c) 1, 2, 4, 8
- d) 5, 7, 9, 11

81. Which statement about functions is true?

- a) Every relation is a function
- b) One element of domain can map to many elements of range
- c) Each element of domain has exactly one image
- d) Function has no inverse

82. Which property defines additive inverse?

- a)  $a + 0 = a$
- b)  $a \times 1 = a$
- c)  $a + (-a) = 0$
- d)  $a \times 0 = 0$

83. Which statement about circles is always true?

- a) All radii are unequal
- b) All radii are equal
- c) Diameter < radius
- d) Circumference = radius

84. Which property is used in:  $(a + b) + c = a + (b + c)$ ?

- a) Commutative
- b) Associative
- c) Distributive
- d) Identity

85. Which statement is always true about odd numbers?

- a) Odd  $\times$  Odd = Even
- b) Odd  $\times$  Odd = Odd
- c) Odd  $\times$  Even = Odd
- d) Odd + Odd = Odd

86. Which statement describes bijection?

- a) Only one-to-one
- b) Only onto
- c) One-to-one and onto
- d) Neither

87. Which set is countable?

- a) Real numbers
- b) Irrational numbers
- c) Natural numbers
- d) Points on a line

88. The complement of universal set is:

- a) Universal
- b) Null
- c) Null set
- d) Infinite

89. Which statement about tangent line to a circle is true?

- a) Tangent cuts circle at 2 points
- b) Tangent touches circle at exactly 1 point
- c) Tangent passes through center
- d) Tangent never touches circle

90. If two parallel lines are cut by a transversal, alternate interior angles are:

- a) Unequal
- b) Supplementary
- c) Equal
- d)  $90^\circ$

91. Which statement describes probability of an impossible event?

- a) 1
- b) 0
- c) 0.5
- d) Undefined

92. Which statement about symmetry is correct?

- a) All functions are symmetric
- b) Odd functions are symmetric about y-axis
- c) Even functions are symmetric about y-axis
- d) Odd functions have no symmetry

93. Which condition makes quadratic equation have equal roots?

- a)  $b^2 - 4ac < 0$
- b)  $b^2 - 4ac > 0$
- c)  $b^2 - 4ac = 0$
- d)  $b^2 - 4ac = 1$

94. Which is always true in probability experiment?

- a) Sample space is empty
- b) Sample space has infinite outcomes
- c) Every outcome belongs to sample space
- d) Sample space has no subsets

95. Which property of determinant holds true?

- a) If two rows are identical, determinant  $\neq 0$
- b) If two rows are identical, determinant = 0
- c) Determinant is always positive
- d) Determinant = sum of diagonals

96. Which graph represents a function?

- a) Circle
- b) Vertical line
- c) Parabola ( $y = x^2$ )
- d) Ellipse

97. Which 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 even, then n is not prime
- c) If n is odd, then n is prime
- d) If n is prime, then n is odd

98. Which set is infinite?

- a)  $\{1, 2, 3\}$
- b)  $\{a, b, c\}$
- c)  $\{x \in \mathbb{N} \mid x > 0\}$
- d)  $\{0\}$

99. Which is true about standard deviation?

- a) Can be negative      b) Always 0      c) Always non-negative      d) Always 1

100. Which function is even?

- a)  $f(x) = x^3$       b)  $f(x) = \sin x$       c)  $f(x) = \cos x$       d)  $f(x) = \tan x$

101. Which function is odd?

- a)  $f(x) = \cos x$       b)  $f(x) = \sin x$       c)  $f(x) = |x|$       d)  $f(x) = x^2$

102. Which of the following is reflexive?

- a)  $a < a$       b)  $a \neq a$       c)  $a = a$       d)  $a > a$

103. Which is true about diagonals of rectangle?

- a) Unequal and perpendicular      b) Unequal and not bisecting  
c) Equal and bisecting      d) Equal and perpendicular

104. Which set is uncountable?

- a) Integers      b) Rational numbers      c) Real numbers      d) Natural numbers

105. Which function has no inverse?

- a) One-to-one      b) Bijective      c) Many-to-one      d) Onto

106. Which logic law:  $P \vee (Q \wedge P) = P$ ?

- a) Distributive      b) Absorption      c) DeMorgan      d) Idempote

107. Which is always true in parallelogram?

- a) All sides equal      b) All angles  $90^\circ$   
c) Opposite sides are parallel      d) Diagonals are equal

108. Which of the following graphs is bounded between -1 and 1?

- a)  $y = x$       b)  $y = x^2$       c)  $y = \sin x$       d)  $y = e^x$

109. Which is always true for any real number a?

- a)  $a^2 < 0$       b)  $a^2 = 0$       c)  $a^2 \geq 0$       d)  $a^2 \leq 0$

110. Which statement about bijective function is true?

- a) Has no inverse      b) Has many inverses  
c) Has unique inverse      d) Has undefined inverse

111. Which logic law:  $\neg(P \wedge Q) = \neg P \vee \neg Q$ ?

- a) Absorption      b) Idempotent      c) De Morgan's Law      d) Associative

112. Which condition makes a quadrilateral cyclic?

- a) All sides equal      b) All angles  $90^\circ$   
c) Opposite angles are supplementary      d) Opposite sides equal

113. Which function is not bounded?

- a)  $\sin x$       b)  $\cos x$       c)  $x^2$       d)  $\tan^{-1}x$

114. Which property:  $a \times 1 = a$ ?

- a) Additive identity      b) Multiplicative identity      c) Zero property      d) Inverse property

115. Which property:  $a + (-a) = 0$ ?

- a) Multiplicative inverse      b) Identity      c) Additive inverse      d) Zero property

116. Which statement about tangent function is true?

- a) Always continuous      b) Undefined at odd multiples of  $\pi/2$   
c) Range is  $[-1, 1]$       d) Even function

117. Which is always true in symmetric matrix?

- a)  $a_{ij} = -a_{ji}$       b)  $a_{ij} = a_{ji}$       c)  $a_{ij} = 0$       d)  $a_{ij} = 1$

118. Which is the complement law in sets?

- a)  $A \cup \emptyset = A$       b)  $A \cup A' = U$       c)  $A \cap A = A$       d)  $A \cap \emptyset = \emptyset$

119. Which of the following graphs is not a function?

- a)  $y = 2x$       b)  $y = x^2$       c) Circle  $x^2 + y^2 = r^2$       d)  $y = \tan x$

120. The union of a set with the empty set is always:

- a) The set itself      b) Universal set      c) Null set      d) Singleton

121. Which relation is always symmetric?

- a) "is less than"      b) "is greater than"      c) "is equal to"      d) "is divides"

122. Which function is many-to-one?

- a)  $y = x$       b)  $y = x^2$       c)  $y = x^3$       d)  $y = 2x + 1$

123. Which set operation is idempotent?

- a)  $A \cup B$       b)  $A \cap B$       c)  $A \cup A = A$       d)  $A \cap B = U$

124. Which law:  $A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$ ?

- a) Idempotent      b) Absorption      c) Distributive      d) De Morgan

125. Which is NOT an equivalence relation?

- a) Reflexive      b) Symmetric      c) Transitive      d) Antisymmetric

126. Which property describes one-to-one correspondence?

- a) Onto only      b) Bijection      c) Many-to-one      d) Reflexive

127. Which is NOT a valid probability value?

- a) 0      b) 1      c) -0.5      d) 0.8

128. The set of all real roots of  $x^2 + 1 = 0$  is:

- a)  $\{0\}$       b)  $\{1\}$       c)  $\emptyset$       d)  $\mathbb{R}$

129. Which is the identity element of addition in real numbers?

- a) 1      b) -1      c) 0      d) None

130. Which of the following is NOT a function?

- a)  $y = 2x$       b)  $y = \sqrt{x}$       c)  $x^2 + y^2 = 1$       d)  $y = \log x$

131. Which is always true in arithmetic sequence?

- a) Ratio is constant      b) Difference is constant  
c) Product is constant      d) Terms are odd

**132. Which property of logarithms:  $\log(ab) = \log a + \log b$ ?**

- a) Quotient law                      b) **Product law**                      c) Powerlaw                      d) Change of base law

**133. Which function is periodic?**

- a)  $y = x$                       b)  $y = x^2$                       c)  **$y = \sin x$**                       d)  $y = \ln x$

**134. Which angle measure gives maximum value of sine?**

- a)  $0^\circ$                       b)  $30^\circ$                       c)  **$90^\circ$**                       d)  $180^\circ$

**135. Which is NOT true about even functions?**

- a) Symmetric about y-axis                      b)  $f(-x) = f(x)$   
c) **Symmetric about origin**                      d) Example:  $\cos x$

**136. Which is true about odd functions?**

- a)  $f(-x) = f(x)$                       b)  **$f(-x) = -f(x)$**                       c) Symmetric about y-axis                      d) Example:  $\cos x$

**137. Which function has restricted domain in real numbers?**

- a)  $y = x$                       b)  $y = x^3$                       c)  **$y = 1/x$**                       d)  $y = 2x + 3$

**138. The slope of line parallel to x-axis is:**

- a) 1                      b) Undefined                      c) **0**                      d) Infinite

**139. The slope of line perpendicular to x-axis is:**

- a) 0                      b) **Undefined**                      c) 1                      d) -1

**140. The determinant of identity matrix is always:**

- a) 0                      b) -1                      c) **1**                      d) 2

**141. If rows of a determinant are proportional, then its value is:**

- a) Positive                      b) Negative                      c) **Zero**                      d) Non-zero

**142. Which matrix property is correct?**

- a)  $AB = BA$  always                      b)  $(AB)C \neq A(BC)$                       c)  **$(AB)C = A(BC)$**                       d)  $(AB)' = A'B'$

**143. Which is the inverse of  $\cos$ ?**

- a)  $\sin$                       b)  **$\arccos$**                       c)  $\sec$                       d)  $\cot$

**144. Which trigonometric identity is correct?**

- a)  $\sin^2\theta - \cos^2\theta = 1$                       b)  $\sin^2\theta + \tan^2\theta = 1$   
c)  **$\sin^2\theta + \cos^2\theta = 1$**                       d)  $1 + \cos^2\theta = \sin^2\theta$

**145. Which is NOT a vector quantity?**

- a) Force                      b) Velocity                      c) **Speed**                      d) Acceleration

**146. Which vectors are perpendicular?**

- a)  $a \cdot b = 0$                       b)  $a \cdot b = 1$                       c)  $a \cdot b > 0$                       d)  **$a \cdot b = 0$**

**147. Which property is true about cross product?**

- a)  $a \times b = b \times a$                       b)  $a \times a \neq 0$                       c)  **$a \times b = -(b \times a)$**                       d)  $|a \times b| = 0$  always

148. Which vector is unit vector?

- a)  $|a| = 0$                       b)  $|a| = 2$                       c)  $|a| = 1$                       d)  $|a| = -1$

149. Which is the measure of randomness in probability?

- a) Mean                      b) Variance                      c) Entropy                      d) Median

150. Which is NOT a property of variance?

- a) Non-negative                      b) Always  $\leq$  mean                      c) Zero if all values equal                      d) Measures spread

151. 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 tosses                      d) Number of pages in book

152. Which of the following is a discrete random variable?

- a) Weight of student                      b) Number of questions in test                      c) Temperature                      d) Time

153. Which distribution has equal mean, median and mode?

- a) Binomial                      b) Poisson                      c) Normal                      d) Exponential

154. Which is NOT a measure of central tendency?

- a) Mean                      b) Median                      c) Mode                      d) Variance

155. Which is NOT a measure of dispersion?

- a) Range                      b) Standard deviation                      c) Variance                      d) Median

156. Which law is expressed by  $(A \cup B)' = A' \cap B'$ ?

- a) Idempotent                      b) Associative                      c) De Morgan's Law                      d) Absorption

157. Which is NOT possible for a relation?

- a) Reflexive                      b) Symmetric  
c) Transitive                      d) Both antisymmetric and symmetric (unless trivial)

158. Which function is strictly increasing?

- a)  $y = \cos x$                       b)  $y = -x$                       c)  $y = e^x$                       d)  $y = -x^2$

159. Which is the range of  $y = \sin x$ ?

- a)  $(0, \infty)$                       b)  $[-1, 1]$                       c)  $\mathbb{R}$                       d)  $[0, \infty)$

160. Which is the range of  $y = \cos x$ ?

- a)  $(0, \infty)$                       b)  $[-1, 1]$                       c)  $(-\infty, \infty)$                       d)  $[0, \infty)$

161. Which is the domain of  $y = \log x$ ?

- a)  $\mathbb{R}$                       b)  $[1, \infty)$                       c)  $(0, \infty)$                       d)  $(-\infty, \infty)$

162. Which is NOT true about tangent function?

- a) Period =  $\pi$                       b) Undefined at  $\pi/2$                       c) Range =  $[-1, 1]$                       d) Odd function

163. Which is the slope of tangent at vertex of  $y = x^2$ ?

- a) 1                      b) -1                      c) 0                      d) 2

164. Which statement is true about definite integral?

- a) Gives slope of tangent                      b) Represents area under curve  
c) Always positive                      d) Always infinite

**165. Which is the derivative of constant?**

- a) 1                                      b)  $x$                                       c) **0**                                      d) Undefined

**166. Which is NOT a property of derivative?**

- a) Linearity                                      b) Product rule                                      c) Chain rule                                      d) **Reflexivity**

**167. Which is the slope of line  $y = 2x + 3$ ?**

- a) 3                                      b) **2**                                      c)  $-2$                                       d) 0

**168. Which is the y-intercept of line  $y = 5x - 7$ ?**

- a) 5                                      b)  $-5$                                       c)  $-7$                                       d) 7

**169. Which shape always has diagonals perpendicular?**

- a) Rectangle                                      b) Parallelogram                                      c) **Rhombus**                                      d) Trapezium

**170. Which quadrilateral is always cyclic?**

- a) Square                                      b) Rectangle                                      c) **Any rectangle**                                      d) Rhombus

**171. Which statement about ellipse is true?**

- a) One focus                                      b) **Two foci**                                      c) Center at infinity                                      d) Axis = circle

**172. Which conic has eccentricity = 0?**

- a) Hyperbola                                      b) Parabola                                      c) **Circle**                                      d) Ellipse ( $\neq 0$ )

**173. Which is the eccentricity of parabola?**

- a) 0                                      b)  $< 1$                                       c)  $> 1$                                       d) **1**

**174. Which conic has eccentricity  $> 1$ ?**

- a) Circle                                      b) Ellipse                                      c) Parabola                                      d) **Hyperbola**

**175. Which system of equations has no solution?**

- a) Consistent                                      b) Dependent                                      c) **Inconsistent**                                      d) Homogeneous

**176. Which system of equations has infinitely many solutions?**

- a) Inconsistent                                      b) Independent                                      c) **Dependent**                                      d) Contradictory

**177. Which system has unique solution?**

- a) Inconsistent                                      b) **Independent**                                      c) Dependent                                      d) Parallel lines

**178. Which transformation preserves distance and angle?**

- a) Shear                                      b) **Isometry**                                      c) Dilation                                      d) Scaling

**Good  
Luck**



# MATHEMATICS



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