QUESTION BANK

CLASS: FYBSC MATHS I TITLE :CALCULUS II

Q 1 The value of 1

(a) 1/ 3
(b) 1
(c) 3 /4
(d) 0

Ans : ¾

2 The value of 1

(a) 6
(b) 3
(c) 4
(d) 0

Ans : 6

3 If f(x) = (tan x)/ x, for x ≠ 0 then lim x→0 f(x) 1

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

Ans (a)

4 Let $f : \mathbb{R} \to \mathbb{R}$ be defined as $f(x) = \begin{cases} x, & \text{if } x < 0 \\ e^x, & \text{if } x \geq 0 \end{cases}$ then $\lim_{x \to 0^+} f(x)$ is

(a) 0
(b) 1
(c) e
(d) Does not exist

Ans (b) -1 1

5 The value of lim x→0 2

(a) -1
(b) 1
(c) 0
(d) Does not exist

Ans : (d)

6 If $f(x) = \begin{cases} 2x + 1 & \text{for } x < 0 \\ x - 1 & \text{for } x \geq 0 \end{cases}$ then $x = 0$ is a point at which the function f is 1

(a) Continuous
(b) Discontinuous
(c) Decreasing
(d) Does not exist

7 $F(x) = x^4 + x^2$, xR is 1
(a) Continuous
(b) Continous only if x>0
(c) Discontinous
(d) Always negative

Ans: (a)

8 The value of where 0<x<1/5
(a) 1
(b) 0
(c) -1
(d) 1/5

Ans (b)

9 The function $f(x) = |x - 2| + 3$, $x \in R$ is 2
(a) discontinuous at x = 3.
(b) discontinuous at x = 2.
(c) continuous everywhere in R.
(d) discontinous everywhere in R

Ans©

10 The function $f : R \longrightarrow R$, $f(x) = 2x^2 - 8$ 1
(a) is continuous at x in R
(b) Discontinuous at x=2
(c) Discontinuous at x =8
(d) Discontinuous in R

Ans (a)

11 Let $f(x) = \begin{cases} 2x + 4 & \text{if } x < 4 \\ 3b & \text{if } x \geq 4. \end{cases}$ If f is continuous on $\mathbb{R}$ then the value of Y is 3
(a) 2
(b) 4
(c) 3
(d) 6

Ans (b) 4

12 If f: RR , and f(x) = 9 then lim x4 f(x) = 1
(a) 4
(b) 9
(c) 36
(d) 13

(b)

13 Consider f, g : R → R and c ∈ R. Under which of the following condition 1

does lim $x \to c$ $f(x)g(x) = 0$ is true

(a) Lim $x \to c$ $f(x)=0$

(b) Lim $x \to c$ $f(x) = L$ and $L \neq 0$ and $g(x)$ is bounded

(c) Lim $x \to c$ $g(x) = L$ and $f(x)$ is bounded

(d) Lim $x \to c$ $f(x) = L$ and Lim $x \to c$ $g(x) = 1/L$, L 0

Ans : (a)

14 lim$x \to \pi/4$ tan x,= 1

(a) 1

(b) ½

(c) 1/

(d) 0

Ans (a)

15 lim $x \to 0$ x^2sin( )= 1

(a) 0

(b) 1

(c) $\pi/2$

(d) does not exist

Ans (b)

16 lim $x \to \pi/2$ $e^{\cos x}$ = 1

(a) e

(b) 0

(c) 1

(d) Not defined

Ans ©

17 cos (log (x^2-2x+2 + sin(2x-2)) = 1

(a) 0

(b) $\pi/2$

(c) 1

(d) Does not exist

Ans : (c)

18 $e^{(x+\sin x-\cos x)}$ =

(a) 1

(b) e

(c) 1/e

(d) Does not exist

Ans: (c) 1

19 1

If f(x)=L and M, =

(a) L/M

(b) M/L

(c) L
(d) M
Ans : (a)

20 The function defined by $f(x) = \begin{cases} x^2 & \text{if } x > 0, \\ 1 & \text{if } x = 0 \\ x^3 & \text{if } x < 0 \end{cases}$ then f is continuous at 5, ——— 2

(a) Only at x =0
(b) at every x ∈ R
(c) on R \ {0}
(d) no where
Ans : (d)

21 Amongst the following, the false statement is ——— 3
(a) There exists a function f : R −→ R, which is discontinuous only at one point.
(b) There exists a function f : R −→ R, which is continuous only at one point.
(c) At least one of (a) and (b) is true.
(d) At least one of (a) and (b) is false.
Ans ©

22 3 is a removable discontinuity of 4
(a)
(b) 1 /sin(x − 3)
(c) (x + 3)/(x – 3)
(d)
Ans (d)

23 If f(x)| = L then 1
(a) f(x)= |a|
(b) f(x)= a
(c) f(x) does not exist
(d) f(x) may or may not exist
Ans (d)

24 If limx→a f(x) = L, which one of the following expressions is necessarily true? 1
(a) f is continuous at x = a
(b) f(a) does not exist.
(c) f(a) = L
(d) lim x−→a+ f(x) = L.
Ans (d)

25 The function $f : [a , b] \rightarrow R$ is continuous on $[a , b]$ then 1

(a) F is not bounded
(b) F is bounded but does not attain it bounds
(c) F is bounded and attain its bounds
(d) F is differentiable

Ans (c)

26 The function defined by $f(x)=\{x^2$ if $x>2$ 1

$= \{x^3$ if $x\leq 2$ is continuous

_________________.

a.)Everywhere (b) at 2 (c) on R\2 (d) None of these

Answer3

27 The function defined by $f(x) =e^{2x}$ is continuous _____________. 1

a.)Only when x is a rational number (b) only when x is an irrational number

(c) at every real number (d) nowhere

Answe3

28. The function defined by $f(x)=\{1, x\in Q$ 1

$\{-1, x\in R\setminus Q$ is continuous

_________________.

a) at every rational number only (b) at every irrational number only

(c) at every real number (d) nowhere

Answer4

29. The function defined by $f(x)=\{x, x\in Q$ 1

$\{-x, x\in R\setminus Q$ is

continuous_____________.

a) at every rational number only (b) at every irrational number only

(c) only at 0 (d) nowhere

Answer3

30. The function defined by $f(x)=\{x \sin(1/x)$ if $x\neq 0$ 1

$\{ a$ if $x=0$ is continuous at

0,____________________.

a) If a=1 (b) if a=-1 (c) if a=0 (d) None of these

Answer1

31 The function f(x)=, for x is 1

a) continuous and bounded b) continuous and not bounded

c)discontinuous d) none of these

Answer1

32 Every bounded sequence in 1

a) has atleast one convergent subsequence b) has only one convergent subsequence
c) is always convergent d) is not convergent
Answer1

33 The polynomial x^2+1 has 1
a) no zero in R b) one zero in R c) two zeros in R d) none of these
Answer1

34 = 1
a) 0 b) 1 c) -1 d) does not exists
Answer1

35 The value of 1
a) 1/ 3 b) 1 c) 5 /7 d) 0
Answer3

36 The value of 1
(a) 1
(b) 1/7
(c) 0
(d) 7

Answer3

37 The value of 1
a) 4 b) 0 c) 1 d) -1
Answer1

38 The function defined by f(x)={x-2 if x≠ 2 1
{ a if x=2 is continuous at 2 if a=,
a) 0 b)1 c)2 d)-2
Answer1

39 The value of 1
a) 4 b) 12 c) 1 d) -1
Answer2

40 The function defined by f(x)={x^2 if x>2 1
= {4 if x≤2 is continuous
_________________.
a.)Everywhere (b) at 2 (c) on R\2 (d) None of these

Answer2

41 The function defined by f(x) ={sin x if x≥ 2
{ cos x if x< s continuous ______________.
a.)Everywhere (b) only at (c) on R \ (d) nowhere

Answer1

42 The function defined by $f(x)=\{x^2+1$ if $x\neq5$ 2

$\{a$ if $x=5$ is continuous at 5.

a) For any $a\in R$ (b) if a=6 (c) if a=26 (d) None of these

Answer3

43 The function defined by $f(x)=\{\cos x+1$ if $x\neq\pi$ 2

$\{ a$ if $x=\pi$ is continuous at

π__________________.

a)For any $a\in R$ (b) if a=1 (c) if a=0 (d) None of these

Answer3

44 The function defined by $f(x) =\{x^2$ if $x>0$ 2

$\{ 1$ if $x=0$

$\{x^3$ if $x<0$ is continuous

__________________.

a)Only at x=0 (b) $\forall x\in R$ (c)$\forall x \in R\backslash 0$ (d) nowhere is continuous

45 Amongst the following, the false statement is____________________. 3

a. There exists a function $f:R\to R$, which is discontinuous only at one point.

b. There exists a function $f:R\to R$, which is continuous only at one point.

c. At least one of (a) and (b) is true.

d. At least one of (a) and (b) is false

Answer4

46 The function defined by $f(x)=\{\sin x+1$ if $x\neq\pi$ 2

$\{ a$ if $x=\pi$ is continuous at

π__________________.

a)For any $a\in R$ (b) if a=1 (c) if a=0 (d) None of these

Answer2

47 The function defined by $f(x)=\{x^3+1$ if $x\neq5$

$\{a$ if $x=5$ is continuous at 5.

a) For any $a\in R$ (b) if a=6 (c) if a=126 (d) 26

Answer3

48 The function defined by $f(x)=\{\sec x+1$ if $x\neq\pi$ 2

$\{a$ if $x=\pi$ is continuous at π__________________.

a)For any $a\in R$ (b) if a=1 (c) if a=0 (d) None of these

Answer3

49 The function defined by $f(x)=\{x^3+1$ if $x\neq4$ 2

$\{a$ if $x=4$ is continuous at 4.

a) For any $a\in R$ (b) if a=65 (c) if a=126 (d) 25

50 The function defined by $f(x)=\{x^4+1$ if $x\neq5$ 2

$\{a$ if $x=5$ is continuous at 5.

a) For any $a\in R$ (b) if a=26 (c) if a=126 (d) 626

Answer4

Unit 2

51 Suppose (where satisfies the following two conditions and Then the value of is 3

a) 55 b) 88 c) 66 d) 77

Answer3

52. Which of the following function is continuous at x=0 but not differentiable at x=0? 1

a) $f(x)=x^{-5/3}$ b) $f(x)=x^{-1/3}$ c)$f(x)=x^{1/3}$ d) $f(x)= x^{5/3}$

Answer4

53. Let then 1

a) b) c) d) not defined

Answer4

54 Let , at the function is 1

a) Continuous but not differentiable
c) Differentiable
b) Differentiable but not continuous
d) Not continuous and not differentiable

Answer4

55. Let be a differentiable function where the line tangent to the graph of at is 1

, then

a) , b)
b) d)

Answer2

56. Let then the number of points where is not differentiable are 1

a) b) c) d)

Answer1

57. Consider the following statements 1

i) If is continuous at then is differentiable at
ii) If exists then is differentiable at
iii) If exists then is differentiable at
iv) If is differentiable at then

a) Only (ii) is true
b) (i) and (iii) are not true
c) (ii) and (iii) are true
d) (i), (ii) and (iv) are true

Answer4

58 Let be differentiable functions with the following properties 3
ii) . If and then

a) b) c) d)

Answer1

57. Let be differentiable functions. If where 1
then is

a) b) c) d)

Answer2

58 If and then 1

a) b) c) d)

Answer1

59 If then is 1

a) b) c) d)

Answer1

60 If then is 1

a) b) c) d)

Answer3

61 If then is (assuming is a function of) 1

a) b) c) d)

Answer2

62 If then is (assuming is a function of) is 1

a) b) c) d)

Answer3

63 If is the inverse function of and if then 1

a) b) c) d)

Answer4

64 Suppose and h is the inverse function of then 1

a) b) c) d)

Answer2

65 Let be differentiable functions. If and are inverses of each other and then is 1

a) c)

b) d) cannot compute as data is insufficient

Answer3

66 If then third order derivative 2

a) cos x c)

c) d)

Answer3

67 Let , the function is 2

a) Continuous but not differentiable at x=0 c) Differentiable at x=0
b) Differentiable but not continuous at x=0 d) Differentiable everywhere except x=0

Answer1

68 2

Then

a) Discontinuous at x=0 and not differentiable at x=0 c) Differentiable at x=0
b) Differentiable but not continuous at x=0 d) continuous and not Differentiable at x=0

Answer1

69 2

a) Continuous but not differentiable at x=0 c) Differentiable at x=0
b) Differentiable but not continuous at x=0 d) Differentiable everywhere

Answer3

70 If f(x)= sinx, $f^n(x)$= 2

a)sin(nπ/2+x) b) sin(nπ/2-x) c) cos(nπ/2+x) d) cos(nπ/2-x)

Answer1

71 If f(x)= cos x, $f^n(x)$= 2

a)sin(nπ/2+x) b) sin(nπ/2-x) c) cos(nπ/2+x) d) cos(nπ/2-x)

Answer3

72 Let , at the function is 2

a) Continuous but not differentiable at x=2 c) Differentiable at x=2
b) Differentiable but not continuous at x=2 d) Not continuous and not differentiable at x=2

Answer3

73 If y= a^x y_2= 2

a) a^x b) a^xloga c) $a^x(\log a)^2$ d) 0

Answer3

74 If y= then 2

a) b)m c) d)m!

Answer3

75 If then third order derivative 2

a) cosx c)
c) d)

Answer3

76 The given function is differentiable at c if the graph of the function has 1

(a) a unique non vertical tangent at c
(b) has many tangent nonvertical tangent at c
(c) a unique vertical tangent at c
(d) has more than vertical tangent at c

Ans : (a)

77 Which of the following functions is continuous at x = 0 but not differentiable at x = 0? 2

(a) $x^{-4/3}$.
(b) $x^{-1/3}$.
(c) $x^{1/3}$.
(d) $x^{4/3}$.

Ans : (d)

78 3

Let $f(x) = \begin{cases} x^2 & \text{if } x \leq 2, \\ 8-2x & \text{if } x > 2. \end{cases}$.

Then f is

(a) continuous but not differentiable at x = 2.
(b) Not continuous at x = 2 but differentiable at x = 2.
(c) Differentiable at x = 2.
(d) Neither continuous nor differentiable at x = 2.

Ans : (a)

79 Let f(x) = |x − 2| + |x − 3|, for all x ∈ R then f'(2) = ? 1

(a) -2
(b) 0
(c) 3
(d) not defined.

(d)

80 F is differential at x =a there for f is 1

(a) continuous at x= a
(b) not continuous at x=a
(c) 1/f is differential at x= a
(d) 1/f is never differential at x =a

Ans : (a)

81 F: RR is differentiable at x =a, if f is even, then 1

(a) F' is odd
(b) F' is even
(c) F' is constant
(d) F' 0

Ans (a)

82 F^2 is differentiable in on R therefor 1

(a) F is differentiable
(b) F is differentiable at some point of R
(c) F is continuous at least some point of F
(d) May or may not continuous and differentiable

Ans (d)

83 F(x) = |x-7|, x in R is 1

(a) Differentiable at x=7
(b) Differentiable in R
(c) Not differentiable on x =7
(d) Not differentiable on R- {0}

Ans : (c)

84 The function tan x is 2

(a) Well- defined on R
(b) Differentiable on R
(c) Not differentiable anywhere on R
(d) Differentiable on nπ

Ans : (d)

85 The function $e^{2\cos x}$ is 3

(a) Differentiable on R

(b) Not differentiable anywhere on R
(c) Not differentiable at x =0
(d) Not differentiable at x =

Ans (a)

86 The derivative of the inverse function of $f(x) = 8x + x^2$, x in R at x=20 is 2

(a) 1/12
(b) 12
(c) 1/48
(d) 48

Ans : (d)

87 The derivative of the inverse function of $f(x) = x^3 - 4x + 1$ in R at x=2 2

(a) 4
(b) ¼
(c) 1/8
(d) 8

Ans: ©

88 If y = sin (ax+b) , where a,b in R, then y_n = 1

(a) $a^n\sin(ax+b +)$
(b) $a^n \cos(ax+b +)$
(c) $a^n\sin(ax+b +)$
(d) $a^n \cos(ax+b +)$

Ans : (a)

89 y = sin (a+b) , where a,b in R, then y_n = 1

(a) $a^n\sin(ax+b +)$
(b) $a^n \cos(ax+b +)$
(c) $a^n\sin(ax+b +)$
(d) 0

Ans (d)

90 The nth derivative of xe^x is 4

(a) e^x
(b) $x^n e^x$
(c) $x e^{nx}$
(d) $x e^x + n e^x$

Ans : (d)

91 Y = cos(2x+5) then y_{10} = 2

(a) sin(2x+5)
(b) $2^{10} \cos(2x+5)$
(c) $2^{10} \cos(2x+5 +)$
(d) $2^{10} \cos(2x+5)$

Ans: (c) answer3

92 If x = cos θ, y = sin θ then dy /dx = 3

(a) $\tan^3 \theta$
(b) tan θ

(c) − tan θ
(d) cot θ
Ans : (c)

93 If $x^2 + 2xy = y^2$ then dy /dx is (assuming y is a function of x) 2
(a) .
(b) .
(c) 2x + 2y.
(d) (x + 1)/ y .
Ans : (b)

94 If h is the inverse function of f and if f(x) = 1 /x then h'(3) = 2
(a) 9
(b) 1/9
(c) -9
(d) -1/9
Ans : (c)

95 Let f, g : R → R be differentiable functions. If f and g are inverses of each other and f' (2) = 5 and g '(2) = ? 1
(a) −5.
(b) 1/ 5 .
(c) – 1/ 5 .
(d) Cannot calculate as data is insufficient.
Ans (b)

96 f : R −→ R is a differentiable function where the tangent to the graph of f(x) at x = 2 is y = x + 1, then
(a) f(2) = 1, f' (2) = 1.
(b) f(2) = 1, f'(2) = 0.
(c) f(2) = 3, f' (2) = 1.
(d) f(2) = 3, f'(2) = 0.
Ans (c)

97 If y = then y_5 = 1
(a)
(b)
(c)
(d)
Ans (a)

Unit 3

98 Point of inflection of $f(x) = x^3 + 2x^2 - 4$ 2
(a) -2/3
(b) 2/3
(c) 3/2
(d) -3/2
Ans (a)

99 $F(x) = e^x$ is always 1

(a) Concave upward everywhere
(b) Concave downward everywhere
(c) Concave upward only x>0
(d) Concave downward for x > 0

Ans (a)

100 Which of the following functions is increasing on the interval $(-\pi/2, \pi/2)$? 1

(a) X^2
(b) Cos x
(c) Sin x
(d) |x|

Ans : (c)

101 The function $y = x^2$ is increasing on 1

(a) R
(b) (-, 0)
(c) (0,
(d) Its decreasing function every where

Ans (b)

102 The function $y = x^3 - 6x^2 + 9x - 3$ is increasing on 2

(a) (1,3)
(b) R
(c) (0,
(d) (-0)

Ans : (a)

103 $F(x) = x^3 - 3x^2 + 3x + 2$ is 1

(a) Monotonically decreasing
(b) Monotonically increasing
(c) Monotonically non decreasing
(d) Monotonically non increasing

Ans : (b)

104 Let f : [a, b] −→ R be a function such that f is continuous on [a, b], differentiable on (a, b) and 1
f(a) = f(b). Then

(a) there exists a unique c ∈ (a, b) such that f'(c) = 0.
(b) there exists c ∈ (a, b) such that f(c) = 0.
(c) there exists c ∈ (a, b) such that f'(c) = 0.
(d) there exists c ∈ (a, b) such that f''(c) = 0.

Ans : ©

105 Let f : [a, b] → R be a function such that f is continuous on [a, b] and differentiable on (a, b). Then 1

(a) there exists a unique c ∈ (a, b) such that f'(c) = .
(b) there exists c ∈ (a, b) such that f'(c) = .

(c) there exists c ∈ (a, b) such that f(c) = .

(d) there exists c ∈ (a, b) such that f''(c) = .

Ans :

106 For a given function, y = f(x), it is found that f' (c) = 0. Therefore, 1

(a) c must be a point of local maximum of f

(b) c must be a point of either local maximum or local minimum of f

(c) c must be a point of local minimum of f.

(d) nothing can be said about c.

Ans : (b)

107 The function $y = e^x$ is concave upwards 1

(a) only at the origin

(b) over negative real numbers only.

(c) over positive real numbers only

(d) Everywhere

Ans (d)

108 The function y = ln x is concave downwards 1

(a) only at 1

(b) over positive rational numbers only.

(c) over positive irrational numbers only.

(d) wherever it is defined.

Ans (d)

109 The n th Taylor polynomial of sin x around 0 is given by 1

(a) x − + − · · · + where n = 2k or n = 2k − 1·

(b) 1+x − + − · · · + where n = 2k or n = 2k − 1·

(c) x + − · · · + where n = 2k or n = 2k − 1·

(d) x − + − · · · + where n = 2k or n = 2k − 1·

Ans : (a)

110 The n th Taylor polynomial of e^x around 0 is given by 1

(a) x − + − · · · + where n = 2k or n = 2k − 1·

(b) 1+x − + − · · · + where n = 2k or n = 2k – 1

(c) x + + − · · · + where n = 2k or n = 2k − 1·

(d) 1+x + + − · · · +

Ans: (d)

111 $F(x) = xe^x$, x in R is 1

(a) Increasing if x> -1

(b) Decreasing if x > 0

(c) Neither increasing nor decreasing

(d) Increasing everywhere

Ans : (a)

112 $F(x) = x - x^2$ in x in R is 2

(a) F is concave upward everywhere

(b) F is concave downward everywhere

(c) Concave upward only if x>0

(d) Concave downward if x>0

Ans : (b)

113 F(x) = $x^6 + x^2$, x in R is 2

(a) F is concave upward everywhere
(b) F is concave downward everywhere
(c) F Concave upward only if x 0
(d) F Concave downward if x 0

Ans : (a)

114 The value of 1

(a) 1
(b) -1
(c) 9/2
(d) 0

Ans; (c)

115 The value of is 1

(a) 1
(b) $Log_e 10$
(c) Log_{10} 10
(d) 0

Ans: (b)

116 F(x) = x^3 -12x +1 has local minima at 2

(a) X =2
(b) X=-2
(c) X=0
(d) X= -1

Ans (b)

117 The value of c ∈(0, 2) for f(x) = cos x by Rolle's theorem 2

(a) 1
(b) -1
(c)
(d)

Ans : ©

118 f(x) = $10 - 12x - 3x^2 - x^3$ in x in R is 3

(a) Increasing everywhere
(b) Decreasing everywhere
(c) Decreasing at x =-2
(d) Increasing at x =2

Ans : (b)

119 f(x) = x − 2 sin x , $0 < x < 3\pi$, has minimum value at 2

(a) π/3
(b) 2 π/6
(c) π/6
(d) 0

Ans : (c)

120 $f(x) = x^2 - 5x + 9, x \in [1, 4]$ what is value of c, by Rolle s theorem 1

(a) 2/5
(b) 5/2
(c) -2/5
(d) -5/2

Ans : (b)

121 If f is continuous at the point and curve changes from concave upward to concave downward or vice versa is called 1

(a) Point of inflection
(b) Maximum at a point
(c) Minimum at a point
(d) increasing

Ans : (a)

122 $F(x) = 5x^2 - 2x$ has critical point at 1

(a) 5
(b) 1/5
(c) -5
(d) -1/5

Ans : (d)

123 $F(x) = x^2 - 8x+5$ has critical point at 2

(e) 4
(f) -4
(g) 2
(h) 8

Ans 1

124 The function y = f(x) is decreasing at c , if 2

(a) , whenever and , whenever .

(b) , whenever and , whenever .

(c) , whenever and , whenever .

(d) all of these

Answer1

125 Tangent of the curve of $F(x) = x^2 +2x+1$ is parallel to line y =4x+3 2

(a) 2
(b) 1
(c) 4
(d) 6

Answer2

126 The function is increasing at *c*, if 1

(a) , whenever and , whenever .

(b) , whenever and , whenever .

(c) , whenever and , whenever .

(d) none of these

Answer2

127 Let *a* and *b* be such that . Then, there exists *c* between *a* and *b* such that 1

(a) (b)

(c) (d) none of these

Answer1

128 Let a function *f* be continuous on [*a*, *b*] and differentiable on (*a*, *b*). Then 1

(a) there exists a unique such that

(b) there exists such that

(c) there exists such that

(d) none of these

Answer3

129 = 1

(a) 0 (b) 1 (c) (d) None of these

Answer1

130 Let a function *f* be continuous on [*a*, *b*], differentiable on (*a*, *b*) and let *f*(*a*) = *f*(*b*). Then 1

(a) there exists a unique such that .

(b) there exists such that .

(c) there exists such that .

(d) none of these

Answer3

131 = 1

(a) 1 (b) 0 (c) *a* (d) None of these

Answer1

132 The function is decreasing at c, if 1

(a) , whenever and , whenever .

(b) , whenever and , whenever .

(c) , whenever and , whenever .

(d) none of these

Answer3

133 Which of the following functions is increasing at the origin? 1

(a) (b) (c) (d)

Answer4

134 = 1

(a) 2 (b) 1 (c) 0 (d) None of these

135 = 1

(a) 1 (b) 0 (c) (d) None of these

Answer1

136 = 1

(a) 0 (b) 1 (c) (d) None of these

Answer2

137 The function is decreasing on 1

(a) (b) (c) (d) None of these

138 The function is increasing on 1

(a) (b) (c) (d) None of these

Answer1

139 The function is decreasing on 1

(a) (1, 3) (b) (c) (d) None of these

Answer1

140 The function is increasing on 1

(a) (b) (c) (d) None of these

Answer3

141 Which of the following functions is decreasing at the origin? 1

(a) (b) (c) (d)

Answer1

142 The function attains its maximum value at 1

(a) 1 (b) –1 (c) 0 (d) None of these

142 The function attains its minimum value 1

(a) at exactly one point (b) at only finitely may points

(c) at infinitely many points (d) nowhere

Answer3

143 For a given function, , it is found that . Therefore, 1

(a) *c* must be a point of local maximum of *f*.
(b) *c* must be a point of local minimum of *f*.
(c) *c* must be a point of either local maximum or local minimum of *f*.
(d) nothing can be said about *c*.

Answer3

144 The function is concave downwards 1

(a) only at 1 (b) over positive rational numbers only

(c) over positive irrational numbers only (d) wherever it is defined

Answer2

145 The function is concave upwards 1

(a) only at the origin (b) over negative real numbers only

(c) over positive real numbers only (d) everywhere

Answer4

146 A triangle with the given perimeter has maximum area if and only if it is 2

(a) obtuse angled (b) isosceles (c) right angled (d) equilateral

Answer4

147 A rectangle with the given perimeter has maximum area if and only if it is a 2

(a) rhombus (b) parallelogram (c) square (d) kite

Answer3

148 The function , has local maximum at 2

(a) (b) (c) 0 (d) None of these

Answer1

149 Amongst the following, the function, which has a local minimum at the origin, is 2

(a) (b)

(c) (d)

Answer4

150 Amongst the following, the function, which has a local maximum at the origin, is 2

(a) (b)

(c) (d)

Answer1