National Testing Agency

Question Paper Name:	Differential Calculus
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Display Marks:	Yes

Differential Calculus

Group Number :	1
Group Id :	709597255
Group Maximum Duration :	0
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Break time:	0
Group Marks:	100

Differential Calculus

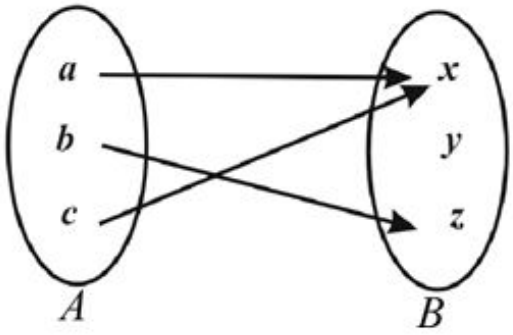
Section Id :	709597332
Section Number :	1
Section type :	Online
Mandatory or Optional:	Mandatory
Number of Questions:	100
Number of Questions to be attempted:	100
Section Marks:	100
Display Number Panel:	Yes
Group All Questions:	No

Sub-Section Number:	1
Sub-Section Id:	709597427
Question Shuffling Allowed :	Yes

Question Number : 1 Question Id : 70959723086 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Range of the function represented by the following arrow diagram is _____



(a) $\{x, y, z\}$
(b) $\{x, y\}$
(c) $\{x, z\}$
(d) None of the above options

Question Number : 2 Question Id : 70959723087 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

. The natural domain of the function given by the formula $g(x)=\frac{x^2-1}{x-1}$ is _____

(a) The set of real numbers except -1
(b) The set of real numbers except 0
(c) The set of real numbers except 1
(d) The set of real numbers

Question Number : 3 Question Id : 70959723088 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

To shift the graph of a function $y=f(x)$ straight up, _____

(a) we add a negative constant to the right-hand side of the formula $y=f(x)$.
(b) we add a positive constant to the right-hand side of the formula $y=f(x)$.
(c) we add a negative constant to x.
(d) we add a positive constant to x.

Question Number : 4 Question Id : 70959723089 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

The graph of the function $f(x)=x+1$ is a _____

(a) straight line
(b) circle
(c) ellipse
(d) parabola

Question Number : 5 Question Id : 70959723090 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

$\lim_{x \to 1^-}(x+1) =$ _____

(a) 0
(b) 1
(c) 2
(d) 3

Question Number : 6 Question Id : 70959723091 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

$\lim_{x \to 3} \frac{x^2 - 9}{x - 3} =$ _____

(a) 1
(b) 3
(c) 4
(d) 6

Question Number : 7 Question Id : 70959723092 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

$\lim_{x \to 0^-} \frac{1}{x} =$ _____

(a) $-\infty$
(b) $+\infty$
(c) 1
(d) -1

Question Number : 8 Question Id : 70959723093 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

$\lim_{x \to -3} \frac{x^3 + 3x^2 - 7}{x^2 + 8} =$ _____.

(a) $\frac{7}{17}$
(b) $-\frac{7}{17}$
(c) $-\frac{1}{17}$
(d) $\frac{1}{17}$

Question Number : 9 Question Id : 70959723094 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

$\lim_{x \to 9} \frac{x - 9}{\sqrt{x} - 3} =$ _____.

(a) 2
(b) 3
(c) 4
(d) 6

Question Number : 10 Question Id : 70959723095 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If $2-\frac{x^2}{4} \le u(x) \le 2+\frac{x^2}{2}$ for all $x \neq 0$, then $\lim_{x\to 0} u(x) =$ _____.

(a) 0
(b) 1
(c) 2
(d) None of the above options

Question Number : 11 Question Id : 70959723096 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

While proving $\lim_{x\to c} x = c$ using the "epsilon-delta" definition, then corresponding a given $\varepsilon > 0$, which of the following $\delta > 0$ is to be chosen such that $|x-c| < \varepsilon$ if $0 < |x-c| < \delta$?

(a) $\delta = 2\varepsilon$
(b) $\delta = \varepsilon$
(c) $\delta = 3\varepsilon$
(d) $\delta = 4\varepsilon$

Question Number : 12 Question Id : 70959723097 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

For the function $f(x) = \frac{x^2+x-6}{x^2-4}$, _____

(a) f is not continuous at $x = 0$
(b) f is continuous at $x = 2$
(c) f is not continuous at $x = 2$
(d) f is continuous at every point

Question Number : 13 Question Id : 70959723098 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The function $f(x) = \frac{1}{x}$ _____

(a) is not continuous for any nonzero real number
(b) is continuous for any nonzero real number
(c) is continuous when $x = 0$
(d) is not continuous when $x = 100$

Question Number : 14 Question Id : 70959723099 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

$\lim_{x\to 0} \frac{\sin x}{x} =$ _____

(a) 0
(b) 1
(c) 2
(d) 3

Question Number : 15 Question Id : 70959723100 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which one of the following is true?

(a) Bolzano's Intermediate Value Theorem holds for continuous functions on closed and bounded intervals.

(b) Bolzano's Intermediate Value Theorem holds for discontinuous functions on closed and bounded intervals.

(c) Bolzano's Intermediate Value Theorem holds for functions on closed and bounded intervals.

(d) Bolzano's Intermediate Value Theorem holds for step functions on closed and bounded intervals.

Question Number : 16 Question Id : 70959723101 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

$[a, \infty) =$ _____

(a) $\{x \in R : x > a\}$

(b) $\{x \in R : x \geq a\}$

(c) $\{x \in R : x < a\}$

(d) $\{x \in R : x \leq a\}$

Question Number : 17 Question Id : 70959723102 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A line intersecting a circle in two points is called _____

(a) secant line

(b) tangent line

(c) diameter

(d) exterior line

Question Number : 18 Question Id : 70959723103 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The slope of the curve $y = \frac{1}{x}$ at $x = a$ is _____

(a) $-\frac{1}{a}$

(b) $\frac{1}{a^2}$

(c) $-\frac{1}{a^2}$

(d) $\frac{1}{a}$

Question Number : 19 Question Id : 70959723104 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The derivative of $y=101x+22$ with respect to x is _____.

(a) 22
(b) 2.2
(c) 101
(d) 10.1

Question Number : 20 Question Id : 70959723105 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which one of the following is true?

(a) Differentiable functions are continuous
(b) Continuous functions are differentiable
(c) Differentiable functions are not continuous
(d) continuous functions are not differentiable

Question Number : 21 Question Id : 70959723106 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If n is a positive integer, then $\frac{d}{dx}[x^n] =$ _____

(a) nx^{n-1}
(b) $(n-1)x^n$
(c) $(n+1)x^n$
(d) $(n-1)x^n$

Question Number : 22 Question Id : 70959723107 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

$\frac{d}{dx}[\cot x] =$ _____

(a) $\csc^2 x$
(b) $-\csc^2 x$
(c) $\sec^2 x$
(d) $-\sec^2 x$

Question Number : 23 Question Id : 70959723108 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

At _____ the function $f(x)=|x-1|+\sin x$ is continuous.

(a) all real numbers, except $x=1$
(b) all real numbers, except $x=-1$
(c) all real numbers, except $x=0$
(d) all real numbers

Question Number : 24 Question Id : 70959723109 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Where does the slope of the curve $y=\frac{2}{x}$ equal $-\frac{1}{2}$?

(a) At the two points $\left(\frac{1}{2}, 2\right)$ and $\left(-\frac{1}{2}, -2\right)$

(b) At the two points $(2, 1)$ and $(-2, -1)$

(c) At the two points $\left(3, \frac{1}{3}\right)$ and $\left(-2, -\frac{1}{2}\right)$

(d) At the two points $\left(-3, -\frac{1}{3}\right)$ and $\left(-2, -\frac{1}{2}\right)$

Question Number : 25 Question Id : 70959723110 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

. The second derivative of $r=\frac{1}{3s^2}-\frac{5}{2s}$ with respect to s is _____

(a) $\frac{2}{s^4}-\frac{5}{s^3}$

(b) $\frac{q}{r}$

(c) $-\frac{q}{r}$

(d) $-\frac{r}{q}$

Question Number : 26 Question Id : 70959723111 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

$\lim_{x\to 0}\frac{\sqrt{1+x}-1}{x}=$ _____

(a) $\frac{1}{2}$

(b) $-\frac{1}{2}$

(c) -2

(d) 2

Question Number : 27 Question Id : 70959723112 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

. Using l'Hôpital's Rule, $\lim_{x\to+\infty}\frac{\log\left(\frac{x+1}{x}\right)}{\log\left(\frac{x-1}{x}\right)}=$_____.

(a) 0

(b) 1

(c) -1

(d) 2

Question Number : 28 Question Id : 70959723113 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If $xy = 1$, then $\frac{dy}{dx} =$ _____

(a) $\frac{y}{x^2}$

(b) $-\frac{y}{x^2}$

(c) $\frac{1}{x^2}$

(d) $-\frac{1}{x^2}$

Question Number : 29 Question Id : 70959723114 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

. If $\frac{1}{y} + \frac{1}{x} = 1$, then $dy/dx =$ _____

(a). $-\frac{y^2}{x^2}$

(b). $\frac{y^2}{x^2}$

(c). $\frac{y}{x^2}$

(d). $-\frac{y}{x^2}$

Question Number : 30 Question Id : 70959723115 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If $y + \sin y = x$, then $d^2y/dx^2 =$ _____.

(a). $-\frac{\sin y}{(1+\cos y)^3}$

(b). $\frac{\sin y}{(1+\cos y)^3}$

(c). $\frac{\cos y}{(1+\cos y)^3}$

(d). $-\frac{\cos y}{(1+\cos y)^3}$

Question Number : 31 Question Id : 70959723116 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

$\frac{d^n}{dx^n}\left(\frac{1}{ax+b}\right) =$ _____ .

(a) $\frac{(n!)a^n}{(ax+b)^{n+1}}$

(b) $\frac{(-1)^{n+1}(n!)a^n}{(ax+b)^{n+1}}$

(c) $\frac{(-1)^n(n!)a^n}{(ax+b)^{n+1}}$

(d) $\frac{(-1)^n(n!)a^{n+1}}{(ax+b)^{n+1}}$

Question Number : 32 Question Id : 70959723117 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

32. $\frac{d^n}{dx^n}[\cos(ax+b)] =$ _____.

(a) $a^n \cos\left(ax+b-\frac{n\pi}{2}\right)$

(b) $a^n \cos\left(ax+b+\frac{n\pi}{2}\right)$

(c) $a^{n+1} \cos\left(ax+b+\frac{n\pi}{2}\right)$

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

Question Number : 33 Question Id : 70959723118 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Suppose u and v are two functions of x possessing derivatives of nth order. Then the nth derivative of the product function uv is given by _____

(a) $(uv)_n = u_n v - {}^nC_1 u_{n-1} v_1 + {}^nC_2 u_{n-2} v_2 + \cdots + (-1)^n {}^nC_n uv_n$

(b) $(uv)_n = -\left(u_n v + {}^nC_1 u_{n-1} v_1 + {}^nC_2 u_{n-2} v_2 + \cdots + {}^nC_n uv_n\right)$

(c) $(uv)_n = u_n v + {}^nC_1 u_{n-1} v_1 + {}^nC_2 u_{n-2} v_2 + \cdots + {}^nC_n uv_n$

(d) $(uv)_n = u_n v + {}^nC_1 u_{n-1} v_1 + {}^nC_2 u_{n-2} v_2 + \cdots + {}^nC_n uv_n$

Question Number : 34 Question Id : 70959723119 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

. If $y = \cos(m \sin^{-1} x)$, then _____

(a). $(1-x^2)y_{n+2} + (2n+1)xy_{n+1} - (m^2 - n^2)y_n = 0$

(b). $(1-x^2)y_{n+2} - (2n+1)xy_{n+1} + (m^2 - n^2)y_n = 0$

(c). $(1-x^2)y_{n+2} - (2n-1)xy_{n+1} + (m^2 - n^2)y_n = 0$

(d). $(1-x^2)y_{n+2} - (2n+1)xy_{n+1} + (m^2 + n^2)y_n = 0$

Question Number : 35 Question Id : 70959723120 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If f is differentiable at $x = x_0$, then the local linearization of f at x_0 is _____

(a) $L(x) = f(x_0) - f'(x_0)(x + x_0)$
(b) $L(x) = f(x_0) + f'(x_0)(x + x_0)$
(c) $L(x) = f(x_0) - f'(x_0)(x - x_0)$
(d) $L(x) = f(x_0) + f'(x_0)(x - x_0)$

Question Number : 36 Question Id : 70959723121 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

$d\left(\frac{x}{x+1}\right) =$ _____

a) $\frac{dx}{(x+1)^2}$

b) $-\frac{dx}{(x+1)^2}$

c) $\frac{dx}{(x-1)^2}$

d) $-\frac{dx}{(x-1)^2}$

Question Number : 37 Question Id : 70959723122 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The radius r of a circle increases from $r_0 = 10$ m to 10.1m. Then the increase in the circle's area A is $dA =$ _____.

(a) $-\pi\ m^2$
(b) $\pi\ m^2$
(c) $-2\pi\ m^2$
(d) $2\pi\ m^2$

Question Number : 38 Question Id : 70959723123 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A function f is strictly increasing on I if for all $x, y \in I$, _____

(a) $x < y$ implies $f(x) < f(y)$.
(b) $x < y$ implies $f(x) > f(y)$.
(c) $x < y$ implies $f(x + y) < 0$.
(d) $x < y$ implies $f(x - y) < 0$.

Question Number : 39 Question Id : 70959723124 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The Maclaurin series of $\frac{1}{1+x}$ is _____

(a) $1-x+x^2-x^3+x^4-x^5+\cdots+(-1)^n x^5+\cdots$

(b) $1+x+x^2+x^3+x^4+x^5+\cdots$

(c) $1+x+\frac{x^2}{2}+\frac{x^3}{3!}+\frac{x^4}{4!}+\frac{x^5}{5!}+\cdots$

(d) None of the option

Question Number : 40 Question Id : 70959723125 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The function $f(x)=x^2+2$ is _____

a) decreasing on $(-\infty, 0]$.

b) increasing on $(-\infty, 0]$.

c) decreasing on $[0, \infty)$.

d) None of the option

Question Number : 41 Question Id : 70959723126 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

For a function f differentiable on (a, b), f is increasing if and only if _____

a) $f'(x) \geq 1$ for all $x \in (a, b)$.

b) $f'(x) \leq 1$ for all $x \in (a, b)$.

c) $f'(x) \geq 0$ for all $x \in (a, b)$.

d) $f'(x) \leq 0$ for all $x \in (a, b)$.

Question Number : 42 Question Id : 70959723127 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The function $f(x)=x^4-2x^2$ is strictly increasing in the interval _____

a) $(-\infty, 3)$

b) $(-\infty, 0)$

c) $(3, \infty)$

d) $(0, 3)$

Question Number : 43 Question Id : 70959723128 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The function $\sin \pi x$ is _____

a) 1 periodic

b) 2 periodic

c) π periodic

d) 2π periodic

Question Number : 44 Question Id : 70959723129 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The function $f(x)=5x^2$ has _____

a) maximum at $x=0$.
b) minimum at $x=0$.
c) minimum at $x=10$.
d) maximum at $x=10$.

Question Number : 45 Question Id : 70959723130 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If f has a local maximum or minimum value at an interior point c and if f is differentiable at c, then _____

a) $f'(c)>0$
b) $f'(c)<0$
c) $f'(c)=0$
d) $f'(c)=\frac{1}{2}$

Question Number : 46 Question Id : 70959723131 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

For the function $f(x)=-\cos(2x)$, the local minimum points are _____

a) $x=n\pi+\frac{\pi}{2}$ for each integer n.
b) $x=n\pi$ for each integer n
c) $x=n\pi+\frac{\pi}{2}$ for each even integer n.
d) $x=n\pi$ for each even integer n

Question Number : 47 Question Id : 70959723132 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Suppose that f is continuous and has exactly one relative extremum on an interval I, say at x_0. If f has a relative maximum at x_0, then _____

a) $f(x_0)$ is the absolute maximum of f on I.
b) $f(x_0)$ is the absolute minimum of f on I.
c) f has no absolute minimum on I.
d) f has no absolute maximum on I.

Question Number : 48 Question Id : 70959723133 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

$\lim_{x\to-\infty}\frac{1}{x}=$_____

a) 1
b) 2
c) 3
d) 0

Question Number : 49 Question Id : 70959723134 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If $p(x)$ is a polynomial of even degree and if the leading coefficient is positive, then _____

a) there is an absolute minimum but no absolute maximum;
b) there is an absolute maximum but no absolute minimum;
c) there is neither absolute minimum nor absolute maximum;
d) there is absolute maxima.

Question Number : 50 Question Id : 70959723135 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Suppose f is continuous in the closed interval $[a, b]$ and differentiable in the open interval (a, b). Then _____

a) there is a point c in the open interval (a, b) at which $\frac{f(b)+f(a)}{b+a}=f'(c)$.
b) there is a point c in the open interval (a, b) at which $\frac{f(b)-f(a)}{b+a}=f'(c)$.
c) there is a point c in the open interval (a, b) at which $\frac{f(b)-f(a)}{b-a}=f'(c)$.
d) there is a point c in the open interval (a, b) at which $\frac{f(b)+f(a)}{b-a}=f'(c)$.

Question Number : 51 Question Id : 70959723136 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If two functions $f(x)$ and $g(x)$ are differentiable in a closed interval $[a, b]$ and $g'(x)\neq 0$ for any value of x in $[a, b]$, then there exists at least one value c of x belonging to the open interval (a, b) such that _____

a) $\frac{f(b)-f(a)}{g(b)-g(a)}=\frac{f'(c)}{g'(c)}$
b) $\frac{f(b)+f(a)}{g(b)-g(a)}=\frac{f'(c)}{g'(c)}$
c) $\frac{f(b)-f(a)}{g(b)+g(a)}=\frac{f'(c)}{g'(c)}$
d) $\frac{f(b)+f(a)}{g(b)+g(a)}=\frac{f'(c)}{g'(c)}$

Question Number : 52 Question Id : 70959723137 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

For the function $y=\frac{25}{x-30}$, $x\neq 30$ _____

a) $y=25$ is a horizontal asymptote
b) $x=25$ is a vertical asymptote
c) $y=30$ is a horizontal asymptote
d) $x=30$ is a vertical asymptote

Question Number : 53 Question Id : 70959723138 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

$\lim_{x \to (2n+1)\frac{\pi}{2}^-} \tan x =$ _____

a) 0
b) 3
c) $+\infty$
d) $-\infty$

Question Number : 54 Question Id : 70959723139 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A horizontal asymptote to the graph of the function $f(x) = \frac{x+3}{x+2}$ is _____

a) $y = -x$
b) $y = 0$
c) $y = 30$
d) $y = 1$

Question Number : 55 Question Id : 70959723140 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The curve $x^2y^2 = (x^2 + y^2)$ has _____

a) no horizontal asymptote
b) no vertical asymptote
c) $y = 30$ is an asymptote
d) $y = -1$ and $y = +1$ are asymptotes

Question Number : 56 Question Id : 70959723141 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The graph of $f(x) = x^2 - 3x + 4$, defined on the domain $D = \{1, 2, 3\}$ is _____

a) Graph of $f = \{(1, 2), (2, 2), (3, 4)\}$
b) Graph of $f = \{(1, 2), (2, 22), (3, 4)\}$
c) Graph of $f = \{(1, 2), (2, 2), (3, 14)\}$
d) Graph of $f = \{(1, 12), (2, 2), (3, 4)\}$

Question Number : 57 Question Id : 70959723142 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

the graph of $y = x^2$ is _____

a) symmetrical about the $x-axis$
b) symmetrical about the $y-axis$
c) symmetrical about the *origin*
d) symmetrical about both the x- and $y-axis$

Question Number : 58 Question Id : 70959723143 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

. The hyperbola $xy = 1$ is _____

a) symmetrical about the x –axis
b) symmetrical about the y –axis
c) symmetrical about the origin
d) symmetrical about both the x- and y –axis

Question Number : 59 Question Id : 70959723144 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

. 100th term of the sequence $((-1)^n : n \in \square)$ is _____

a) 100
b) –100
c) –1
d) 1

Question Number : 60 Question Id : 70959723145 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A sequence of real numbers (u_n) converges if _____

a) there is a real number L such that for every $\varepsilon > 0$ there is a positive integer N such that $|u_n - L| \geq \varepsilon$ for $n \geq N$.

b) there is a real number L such that for every $\varepsilon > 0$ there is a positive integer N such that $|u_n - L| > \varepsilon$ for $n \geq N$.

c) there is a real number L such that for every $\varepsilon > 0$ there is a positive integer N such that $|u_n - L| < \varepsilon$ for $n \geq N$.

d) there is a real number L such that for every $\varepsilon > 0$ there is a positive integer N such that $|u_n - L| \leq \varepsilon$ for $n \geq N$.

Question Number : 61 Question Id : 70959723146 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The sequence $(-1, 2, -1, 2, \ldots, -1, 2, \ldots)$, _____

a) converges to 2
b) converges to –1
c) does not converge to any real number
d) converges to some real number

Question Number : 62 Question Id : 70959723147 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The sequence $\left\{(-1)^n \frac{n-5}{n}\right\}$ _____

a) converges to 0
b) converges to 5
c) does not converge to any real number
d) converges to some real number

Question Number : 63 Question Id : 70959723148 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

Which of the following is the Fibonacci sequence?

a) {1, 1, 2, 2, 4, 6, 10, 16, 26, 42, ...}
b) {0, 1, 2, 3, 5, 8, 13, 21, 34, 55, ...}
c) {1, 2, 3, 5, 8, 13, 21, 34, 55, ...}
d) {1, 1, 2, 3, 5, 8, 13, 21, 34, 55, ...}

Question Number : 64 Question Id : 70959723149 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

If a nonincreasing sequence converges, it converges to _____

a) its least upper bound.
b) its upper bound.
c) its lower bound.
d) its greatest lower bound.

Question Number : 65 Question Id : 70959723150 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

Limit of the sequence $\left\{\frac{4-7n^6}{n^5+3}\right\}$ is _____

a) 7
b) −7
c) 0
d) 1

Question Number : 66 Question Id : 70959723151 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

. The sequence $\left((-1)^n \frac{1}{n}\right)$ _____

a) converges to 1
b) converges to −1
c) converges to 0
d) doesn't converge

Question Number : 67 Question Id : 70959723152 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

$\lim_{n\to\infty}\left(\frac{n+1}{n-1}\right)^n =$ _____

a) e^2

b) e

c) $1/e$

d) doesn't exist

Question Number : 68 Question Id : 70959723153 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

. n^{th} partial sums of the series $\sum_{n=1}^{\infty} u_n$, where $u_n = \frac{1}{2^{n-1}}$ is _____

a) $2+\left(\frac{1}{2}\right)^{n-1}$

b) $2-\left(\frac{1}{2}\right)^{n}$

c) $2+\left(\frac{1}{2}\right)^{n}$

d) $2-\left(\frac{1}{2}\right)^{n-1}$

Question Number : 69 Question Id : 70959723154 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The sum of the series $0.3+0.03+0.003+0.0003+\cdots$ is _____

a) $\frac{1}{3}$

b) $-\frac{1}{3}$

c) $\frac{1}{9}$

d) $-\frac{1}{9}$

Question Number : 70 Question Id : 70959723155 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

. The series

$$\sum_{n=1}^{\infty}\frac{1}{n^p}=\frac{1}{1^p}+\frac{1}{2^p}+\frac{1}{3^p}+\cdots+\frac{1}{n^p}+\cdots$$

diverges if _____

a) $0<p\leq 1$

b) $0<p<1$

c) $0<p\leq 2$

d) $p>1$

Question Number : 71 Question Id : 70959723156 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The series $\sum_{n=1}^{\infty}\frac{\sqrt{n+1}-\sqrt{n-1}}{n^3}$ _____

a) diverges

b) converges

c) has sequence of nth partial sum diverges

d) is a hyperharmonic series

Question Number : 72 Question Id : 70959723157 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

. Which one of the following alternating series is not convergent?

a) $1-\frac{1}{2}+\frac{1}{3}-\frac{1}{4}+\cdots+\frac{(-1)^{n+1}}{n}+\cdots$

b) $1-\frac{1}{\sqrt{2}}+\frac{1}{\sqrt{4}}-\frac{1}{\sqrt{8}}+\frac{1}{\sqrt{16}}\cdots$

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

d) $1-2+3-4+\cdots+(-1)^{n+1}n+\cdots$

Question Number : 73 Question Id : 70959723158 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which one of the following series is absolutely convergent?

a) $1-\frac{1}{2^3}+\frac{1}{3^3}-\frac{1}{4^3}+\frac{1}{5^3}-\cdots$

b) $1-\frac{1}{\sqrt{2}}+\frac{1}{\sqrt{4}}-\frac{1}{\sqrt{8}}+\frac{1}{\sqrt{16}}\cdots$

c) $1-\frac{1}{2^{01}}+\frac{1}{3^{01}}-\frac{1}{4^{01}}+\cdots$

d) $1-2+3-4+\cdots+(-1)^{n+1}n+\cdots$

Question Number : 74 Question Id : 70959723159 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

. Which one of the following is false.

a) It is possible to find a rearrangement of $\sum_{n=1}^{\infty}\frac{(-1)^{n+1}}{n}$ that converges to 119.

b) It is possible to find a rearrangement of $\sum_{n=1}^{\infty}\frac{(-1)^{n+1}}{n}$ that converges to 1001.

c) It is possible to find a rearrangement of $\sum_{n=1}^{\infty}\frac{(-1)^{n+1}}{n}$ that converges to 2356.

d) It is impossible to find a rearrangement of $\sum_{n=1}^{\infty}\frac{(-1)^{n+1}}{n}$ that converges to 22.

Question Number : 75 Question Id : 70959723160 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The power series $\sum_{n=0}^{\infty}x^n = 1+x+x^2+\cdots+x^n+\cdots$ _____

a) doesn't converge at $x = 1$

b) converges at $x = 1$

c) converges at $x = 10$

d) converges at $x = 2.2$

Question Number : 76 Question Id : 70959723161 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The power series $\sum_{n=0}^{\infty}x^n = 1+x+x^2+\cdots+x^n+\cdots$ _____

a) doesn't converge at $x = 1$

b) converges at $x = 1$

c) converges at $x = 10$

d) converges at $x = 2.2$

Question Number : 77 Question Id : 70959723162 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

. The radius of convergence of $\sum_{n=0}^{\infty}n!x^n = 1+x+2!x^2+3!x^3+\cdots$ is _____

a) $+\infty$

b) 1

c) 0

d) $\frac{1}{2}$

Question Number : 78 Question Id : 70959723163 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The interval of convergence of the series $1+x+x^2+x^3+\cdots$ is _____

a) $(1, +\infty)$

b) $(-1, 1)$

c) $\left(-\frac{1}{2}, \frac{1}{2}\right)$

d) $(-2, 2)$

Question Number : 79 Question Id : 70959723164 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which one of the following is the cosine series?

a) $x+\frac{x^3}{3!}+\frac{x^5}{5!}+\ldots$

b) $x-\frac{x^3}{3!}+\frac{x^5}{5!}-\ldots$

c) $x-\frac{x^3}{2!}+\frac{x^5}{4!}-\ldots$

d) $1-\frac{x^2}{2!}+\frac{x^4}{4!}-\ldots$

Question Number : 80 Question Id : 70959723165 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The parametric equations $x=t$ and $y=t$ (t be any real number) represents _____

a) a parabola

b) an ellipse

c) a circle

d) a straight line

Question Number : 81 Question Id : 70959723166 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The parametric equations $x=t,\ y=\sin t \quad (-2\pi \le t \le 2\pi)$ represents _____

a) the portion of the curve $y=\sin x$ over the interval $[0, 2\pi]$

b) the portion of the curve $y=\sin x$ over the interval $[-2\pi, 0]$

c) the portion of the curve $y=\sin x$ over the interval $[-2\pi, 2\pi]$

d) None of the above options

Question Number : 82 Question Id : 70959723167 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

dy/dx when $x = 2t + 3$ and $y = t^2 - 1$ is _____

a) $2t$

b) t

c) $-t$

d) $-2t$

Question Number : 83 Question Id : 70959723168 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

. $\frac{d^2y}{dx^2}$ when $x = t^2$, $y = t^3$, $-\infty < t < \infty$ is _____

a) $2t^2$

b) $\frac{t^3}{3}$

c) $-\frac{3}{2}t$

d) $\frac{3}{4t}$

Question Number : 84 Question Id : 70959723169 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Another polar coordinate of the point with polar coordinate $(5, -3\pi/2)$ is _____

a) $(5, \pi/2)$

b) $(5, 0)$

c) $(5, -\pi)$

d) $(5, \pi)$

Question Number : 85 Question Id : 70959723170 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which one of the following is the polar equivalent of the curve whose Cartesian equation is $x^2 - y^2 = 1$.

a) $r^2 \cos\theta = 1$

b) $r^2 \sin 2\theta = 1$

c) $r^2 \cos 2\theta = 1$

d) $r^2 \sin\theta = 1$

Question Number : 86 Question Id : 70959723171 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

. Which one of the following is the Cartesian equivalent of the curve whose polar equation is $r\cos\left(\theta-\frac{\pi}{4}\right)=\sqrt{2}$.

a) $x+y=4$

b) $x+y=\frac{1}{2}$

c) $x+y=2$

d) $x-y=2$

Question Number : 87 Question Id : 70959723172 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The polar equation $r=\frac{1}{2}$ represents _____

a) a straight line

b) an ellipse

c) the circle of radius $\frac{1}{2}$ centered at the origin

d) the circle of radius 1 centered at the origin

Question Number : 88 Question Id : 70959723173 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

. The cardioid $r=1-\cos\theta$ is _____

a) is not symmetric about the x-axis.

b) is symmetric about the x-axis.

c) tangent at the origin is the y- axis.

d) tangent at the origin is the line $y=x$

Question Number : 89 Question Id : 70959723174 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The polar equation $r=7\cos 3\theta$ has _____

a) 2 equally spaced petals of radius 7

b) 3 equally spaced petals of radius 7

c) 6 equally spaced petals of radius 7

d) 9 equally spaced petals of radius 7

Question Number : 90 Question Id : 70959723175 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The curvature at any point of a circle is _____

a) the radius of circle.

b) twice the radius of circle.

c) the reciprocal of the radius of circle.

d) the reciprocal of twice the the radius of circle.

Question Number : 91 Question Id : 70959723176 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

. The radius of curvature of the curve $y = f(x)$ at the point $P(x, y)$ is _____

a) $\dfrac{\left[1+\left(\frac{dy}{dx}\right)^2\right]^{\frac{3}{2}}}{\frac{d^2y}{dx^2}}$

b) $\dfrac{1+\left(\frac{dy}{dx}\right)^2}{\frac{d^2y}{dx^2}}$

c) $\dfrac{\left[1+\left(\frac{dy}{dx}\right)^2\right]^{\frac{1}{2}}}{\frac{d^2y}{dx^2}}$

d) $\dfrac{\left[1-\left(\frac{dy}{dx}\right)^2\right]^{\frac{1}{2}}}{\frac{d^2y}{dx^2}}$

Question Number : 92 Question Id : 70959723177 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The radius of curvature of the curve $x = a(t + \sin t),\ y = a(1 - \cos t)$ at a point t in parametric coordinates is _____

a) $\rho(t) = 4a\cos t$

b) $\rho(t) = 2a\cos\left(\frac{1}{2}t\right)$

c) $\rho(t) = 4a\cos 2t$

d) $\rho(t) = 4a\cos\left(\frac{1}{2}t\right)$.

Question Number : 93 Question Id : 70959723178 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The centre of curvature at θ of the ellipse given by the parametric coordinates $x = a\cos\theta,\ y = b\sin\theta$ is _____

a) $\left(\frac{a^2+b^2}{a}\sin^3\theta,\ -\frac{a^2+b^2}{a}\cos^3\theta\right)$

b) $\left(\frac{a^2+b^2}{a}\cos^3\theta,\ \frac{a^2+b^2}{a}\sin^3\theta\right)$

c) $\left(\frac{a^2-b^2}{a}\cos^3\theta,\ -\frac{a^2-b^2}{a}\sin^3\theta\right)$

d) $\left(\frac{a^2+b^2}{a}\cos^3\theta,\ -\frac{a^2+b^2}{a}\sin^3\theta\right)$

Question Number : 94 Question Id : 70959723179 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The inverse of the function $g(x) = \frac{2x-3}{5x-7},\ x \neq \frac{7}{5}$ is _____

a) $g^{-1}(x) = \frac{7x-3}{5x-7},\ x \neq \frac{7}{5}$

b) $g^{-1}(x) = \frac{5x-3}{5x-3},\ x \neq \frac{3}{5}$

c) $g^{-1}(x) = \frac{7x-3}{5x-2},\ x \neq \frac{2}{5}$

d) $g^{-1}(x) = \frac{7x-3}{5x-1},\ x \neq \frac{1}{5}$

Question Number : 95 Question Id : 70959723180 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The natural domain of the function $z = \frac{1}{x^3 - y^3}$ is _____

a) $D = \{(x, y) \in R^2 : x < y\}$

b) $D = \{(x, y) \in R^2 : x > y\}$

c) $D = \{(x, y) \in R^2 : x = y\}$

d) $D = \{(x, y) \in R^2 : x \neq y\}$

Question Number : 96 Question Id : 70959723181 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

$\lim_{(x,y)\to(0,1)} \frac{5x^{3/2}}{\sqrt{3x^2+5y^2+7}} =$ _____

a) 0

b) -1

c) $\frac{1}{2}$

d) $-\frac{1}{2}$

Question Number : 97 Question Id : 70959723182 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

$\frac{\partial}{\partial x}(\sin xy) =$ _____

a) $-y\cos xy$

b) $y\cos xy$

c) $y\sin xy$

d) $-y\sin xy$

Question Number : 98 Question Id : 70959723183 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

. The value of $\frac{\partial^2 z}{\partial x^2}$, where $z = e^x(x\cos y - y\sin y)$, is _____

a) $e^x(x\cos y - y\sin y) + e^x\cos y + e^x\cos y$

b) $e^x(x\cos y + y\sin y) + e^x\cos y + e^x\cos y$

c) $e^x(x\cos y - y\sin y) - e^x\cos y + e^x\cos y$

d) $e^x(x\cos y - y\sin y) - e^x\cos y - e^x\cos y$

Question Number : 99 Question Id : 70959723184 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A function $f(x, y)$ is differentiable at (x_0, y_0) if _____

a) $\lim_{(\Delta x, \Delta y)\to(0,0)} \frac{\Delta f + f_x(x_0, y_0)\Delta x - f_y(x_0, y_0)\Delta y}{\sqrt{(\Delta x)^2 + (\Delta y)^2}} = 0$

b) $\lim_{(\Delta x, \Delta y)\to(0,0)} \frac{\Delta f - f_x(x_0, y_0)\Delta x - f_y(x_0, y_0)\Delta y}{\sqrt{(\Delta x)^2 + (\Delta y)^2}} = 0$

c) $\lim_{(\Delta x, \Delta y)\to(0,0)} \frac{\Delta f - f_x(x_0, y_0)\Delta x + f_y(x_0, y_0)\Delta y}{\sqrt{(\Delta x)^2 + (\Delta y)^2}} = 0$

d) $\lim_{(\Delta x, \Delta y)\to(0,0)} \frac{\Delta f - f_x(x_0, y_0)\Delta x - f_y(x_0, y_0)\Delta y}{\sqrt{(\Delta x)^2 - (\Delta y)^2}} = 0$

Question Number : 100 Question Id : 70959723185 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If $w = x + 2y + z^2,\ \ x = \frac{u}{v},\ y = u^2 + \ln v,\ z = 2u,$ then $\frac{\partial w}{\partial v} =$ _____

a) $\frac{2}{v} + \frac{u}{v^2}$

b) $-\frac{2}{v} + \frac{u}{v^2}$

c) $\frac{2}{v} - \frac{u}{v^2}$

d) $\frac{2}{v} + \frac{u}{v^2}$