

Question No : 52 of 52

Marks: 5 (Budgeted Time 10 Min)

Let $\vec{r}(t) = t^2 \hat{i} + t \hat{j} + (t^2 - 5) \hat{k}$. Find t , such that $\vec{r}(t)$ and $\vec{r}'(t)$ are perpendicular to each other.

Answer ([Please click here to Add Answer](#))

VuAnswers.com



Made by: Waqar Siddhu

Question No : 51 of 52

Marks: 5 (Budgeted Time 10 Min)

If $f(x, y) = (x-4) \ln(xy)$
Find both first order partial derivatives.

Answer ([Please click here to Add Answer](#))

VuAnswers.com



Made by: Waqar Siddhu

Question No : 50 of 52

Marks: 5 (Budgeted Time 10 Min)

Determine whether the following vector field \vec{F} is conservative or not.

$$\vec{F}(x, y, z) = x^2z\hat{i} + y^2x\hat{j} + (y + 2z)\hat{k}$$

Answer ([Please click here to Add Answer](#))

VuAnswers.com



Made by: Waqar Siddhu

Question No : 49 of 52

Marks: 5 (Budgeted Time 10 Min)

Determine the Fourier co-efficient b_n of the periodic function defined below:

$$f(x) = 2x + 1 \quad 0 < x < 2$$

Answer ([Please click here to Add Answer](#))

VuAnswers.com



Made by: Waqar Siddhu

Question No : 48 of 52

Marks: 3 (Budgeted Time 6 Min)

What is the arc-length of the curve $\vec{r}(t) = 3\cos t \hat{i} + 3\sin t \hat{j}$ when $0 \leq t \leq 2\pi$?

Answer ([Please click here to Add Answer](#))

VuAnswers.com



Made by: Waqar Siddhu

Question No : 47 of 52

Marks: 3 (Budgeted Time 6 Min)

Find the critical point for the given function $f(x, y) = 6x^2 + xy - 2y^2$ along the line $y = 3x + 1$ at which the absolute extrema of the function can occur.

Answer ([Please click here to Add Answer](#))

VuAnswers.com



Made by: Waqar Siddhu

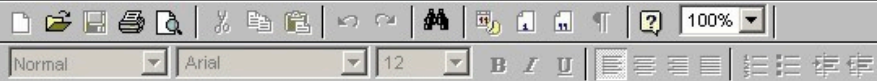
Question No : 45 of 52

Marks: 3 (Budgeted Time 6 Min)

Use Wallis sine formula to evaluate $\int_0^{\frac{\pi}{2}} (\sin^3 x + \sin^4 x) dx$

Answer ([Please click here to Add Answer](#))

VuAnswers.com



Made by: Waqar Siddhu

Question No : 46 of 52

Marks: 3 (Budgeted Time 6 Min)

Find Laplace transform of the function $F(t)$ if

$$F(t) = e^{2t} \sin 3t$$

Answer ([Please click here to Add Answer](#))

VuAnswers.com



Made by: Waqar Siddhu

Question No : 44 of 52

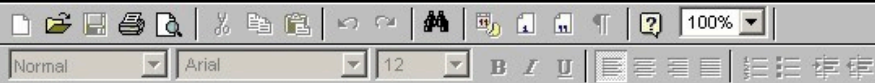
Marks: 2 (Budgeted Time 4 Min)

Find derivative of the following vector-valued function.

$$\vec{r}(t) = e^{t^2} \hat{i} + t^2 \hat{j} + \sec 2t \hat{k}$$

Answer ([Please click here to Add Answer](#))

VuAnswers.com



Made by: Waqar Siddhu

Question No : 42 of 52

Marks: 2 (Budgeted Time 4 Min)

Find Laplace transform of the function $F(t)$ if $F(t) = \cos 3t$.

Answer ([Please click here to Add Answer](#))

VuAnswers.com



Made by: Waqar Siddhu

Question No : 43 of 52

Marks: 2 (Budgeted Time 4 Min)

State the condition when $\iint_R f(x, y) dA = \int_c^a \int_a^b f(x, y) dx dy = \int_a^c \int_c^b f(x, y) dy dx$ where R is the region of integration.

Answer ([Please click here to Add Answer](#))

VuAnswers.com



Made by: Waqar Siddhu

Question No : 41 of 52

Marks: 2 (Budgeted Time 4 Min)

Use Wallis sine formula to evaluate $\int_0^{\frac{\pi}{2}} \sin^5 x \, dx$

Answer ([Please click here to Add Answer](#))

VuAnswers.com



Made by: Waqar Siddhu

Question No : 40 of 52

Marks: 1 (Budgeted Time 1 Min)

A function is said to be smooth if it's derivative is on any value of its domain.

Answer (Please select your correct option)

VuAnswers.com

continuous and non zero

piecewise continuous

defined and non zero

differentiable

correct

Made by: Waqar Siddhu

Question No : 39 of 52

Marks: 1 (Budgeted Time 1 Min)

A single curve can be represented by vector valued function(s).

Answer (Please select your correct option)

VuAnswers.com

Two

Infinitely many

Single

correct

Three

Made by: Waqar Siddhu

Question No : 37 of 52

Marks: 1 (Budgeted Time 1 Min)

Given a vector valued function $\vec{r}(t) = \frac{1}{(t-3)}\hat{i} + e^t\hat{j}$ and its anti-derivative $\dot{R}(t) = \ln(t-3)\hat{i} + e^t\hat{j}$, then $\int \vec{r}(t) dt = \dots\dots\dots$

Answer (Please select your correct option)

VuAnswers.com

- $\ln(t-3)\hat{i} + e^t\hat{j} + c$
- $(t-3)\hat{i} + \frac{e^t}{2}\hat{j} + c$
- $(t-3)^{-1}\hat{i} + \frac{e^t}{2}\hat{j} + c$
- $\frac{1}{(t-3)}\hat{i} + e^t\hat{j}$

correct

Made by: Waqar Siddhu

Question No : 38 of 52

Marks: 1 (Budgeted Time 1 Min)

For any two vector valued functions $\vec{r}_1(t)$ and $\vec{r}_2(t)$, $\frac{d}{dt}[\vec{r}_1(t) \times \vec{r}_2(t)] = \dots\dots\dots$ where " \times " and " \cdot " represent the cross and dot product respectively.

Answer (Please select your correct option)

VuAnswers.com

$\vec{r}_1 \cdot \frac{d\vec{r}_2}{dt} - \frac{d\vec{r}_1}{dt} \cdot \vec{r}_2$

$\vec{r}_1 \cdot \frac{d\vec{r}_2}{dt} + \frac{d\vec{r}_1}{dt} \cdot \vec{r}_2$

$\vec{r}_1 \times \frac{d\vec{r}_2}{dt} + \frac{d\vec{r}_1}{dt} \times \vec{r}_2$

$\vec{r}_1 \cdot \frac{d\vec{r}_2}{dt} - \frac{d\vec{r}_1}{dt} \times \vec{r}_2$

correct

Made by: Waqar Siddhu

Question No : 36 of 52

Marks: 1 (Budgeted Time 1 Min)

A vector valued function $\vec{r}(t) = x(t)\hat{i} + y(t)\hat{j} + z(t)\hat{k}$ is continuous if

Answer (Please select your correct option)

VuAnswers.com

- Atleast one of its components is continuous.
- All of its components are necessarily differentiable.
- All of its components are continuous.
- Limit exists for all of its components.

correct

Made by: Waqar Siddhu

Question No : 35 of 52

Marks: 1 (Budgeted Time 1 Min)

For the given vector valued functions $\vec{r}_1(t)$ and $\vec{r}_2(t)$, $\frac{d}{dt}[\vec{r}_1(t) \times \vec{r}_2(t)] = \dots\dots\dots$ where " \times " and " \cdot " represent the cross and dot product respectively.

Answer (Please select your correct option)

VuAnswers.com

$\vec{r}_1 \cdot \frac{d\vec{r}_2}{dt} + \frac{d\vec{r}_1}{dt} \cdot \vec{r}_2$

$\vec{r}_1 \times \frac{d\vec{r}_2}{dt} + \frac{d\vec{r}_1}{dt} \times \vec{r}_2$

$\frac{d\vec{r}_2}{dt} \times \vec{r}_1 + \vec{r}_2 \times \frac{d\vec{r}_1}{dt}$

$\frac{d\vec{r}_2}{dt} \times \vec{r}_1 + \frac{d\vec{r}_1}{dt} \times \vec{r}_2$

Made by: Waqar Siddhu

Question No : 34 of 52

Marks: 1 (Budgeted Time 1 Min)

If $\overset{\frown}{R}(t)$ is the anti-derivative of a given vector valued function $\overset{\frown}{r}(t)$ i.e., $\overset{\frown}{R}'(t) = \overset{\frown}{r}(t)$ then $\int_a^b \overset{\frown}{r}(t) dt = \dots\dots\dots$

Answer (Please select your correct option)

VuAnswers.com

$\overset{\frown}{R}(a) + \overset{\frown}{R}(b)$

$\overset{\frown}{R}(b) - \overset{\frown}{R}(a) + c$ where c is a non-zero constant.

correct

$\overset{\frown}{R}(a) \overset{\frown}{R}(b)$

$\overset{\frown}{R}(b) - \overset{\frown}{R}(a)$

Made by: Waqar Siddhu

Question No : 33 of 52

Marks: 1 (Budgeted Time 1 Min)

The natural domain of a vector valued function is the union of the natural domains of its components

Answer (Please select your correct option)

VuAnswers.com

Product

Summation

Union

Intersection

correct

Made by: Waqar Siddhu

Question No : 32 of 52

Marks: 1 (Budgeted Time 1 Min)

The graph of the equation $r = 3\hat{i} - 2\hat{j} - \hat{k}$ is the point

Answer (Please select your correct option)

VuAnswers.com

(1, -2, 3)

(3, -2, -1)

correct

(3, 2, 1)

(-3, -2, -1)

Made by: Waqar Siddhu

Question No : 30 of 52

Marks: 1 (Budgeted Time 1 Min)

If $p(r, \theta)$ is a point in polar coordinate system, then r is the distance of p from

Answer (Please select your correct option)

VuAnswers.com

Pole

correct

Imaginary axis

None of these

Polar axis

Made by: Waqar Siddhu

Question No : 31 of 52

Marks: 1 (Budgeted Time 1 Min)

Given the integral $\iint_R f(x,y) dx dy$, after converting to polar coordinates, it will become where $a \leq \theta \leq b$ and $c \leq r \leq d$.

Answer (Please select your correct option)

VuAnswers.com

$\int_a^b \int_c^d f(r, \theta) r dr d\theta$

correct

$\int_a^b \int_c^d f(r, \theta) dr d\theta$

$\int_a^b \int_c^d f(r, \theta) r d\theta dr$

$\int_a^b \int_c^d f(r, \theta) d\theta dr$

Made by: Waqar Siddhu

Question No : 29 of 52

Marks: 1 (Budgeted Time 1 Min)

Polar co-ordinates of a point are $\left(7, \frac{-\pi}{4}\right)$. Which of the following is another possible polar co-ordinates representation of this point?

Answer (Please select your correct option)

VuAnswers.com

$\left(7, \frac{3\pi}{4}\right)$

$\left(-7, \frac{3\pi}{4}\right)$

$\left(-7, \frac{-\pi}{4}\right)$

$\left(7, \frac{-3\pi}{4}\right)$

Made by: Waqar Siddhu

Question No : 27 of 52

Marks: 1 (Budgeted Time 1 Min)

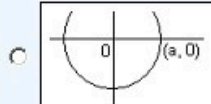
Match the following equation in polar co-ordinates with its graph.

$$r \sin \theta = a$$

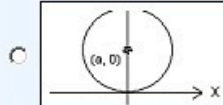
where a is an arbitrary constant

Answer (Please select your correct option)

VuAnswers.com



correct



Made by: Waqar Siddhu

Question No : 28 of 52

Marks: 1 (Budgeted Time 1 Min)

Polar co-ordinates of a point are $(-8, 45^\circ)$. Which of the following is another possible polar co-ordinates representation of this point?

Answer (Please select your correct option)

VuAnswers.com

$(8, 225^\circ)$

$(-8, 225^\circ)$

$(8, 45^\circ)$

$(8, 315^\circ)$

correct

Made by: Waqar Siddhu

Question No : 27 of 52

Marks: 1 (Budgeted Time 1 Min)

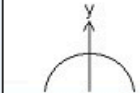
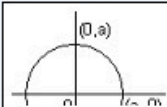
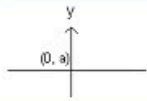
Match the following equation in polar co-ordinates with its graph.

$$r \sin \theta = a$$

where a is an arbitrary constant

Answer (Please select your correct option)

VuAnswers.com



Made by: Waqar Siddhu

Question No : 26 of 52

Marks: 1 (Budgeted Time 1 Min)

If $R = \{(x, y) : 0 \leq x \leq 2 \text{ and } 0 \leq y \leq 3\}$, then $\iint_R (1 - ye^{xy}) dA = \dots\dots\dots$

Answer (Please select your correct option)

VuAnswers.com

$\int_0^2 \int_0^3 (1 - ye^{xy}) dy dx$

correct

$\int_0^2 \int_0^3 (1 - ye^{xy}) dx dy$

$\int_{\frac{1}{2}}^3 \int_0^0 (1 - ye^{xy}) dx dy$

$\int_0^2 \int_{\frac{1}{2}}^3 (4xe^{2y}) dy dx$

Made by: Waqar Siddhu

Question No : 25 of 52

Marks: 1 (Budgeted Time 1 Min)

Let x, y, z be the length, width and height of an open rectangular box. The surface area of the box will be _____.

Answer (Please select your correct option)

VuAnswers.com

$A = xy + 2yz + 2xz$

$A = yz + 4$

$A = xz + yz + zx$

$A = xyz$

correct

Made by: Waqar Siddhu

Question No : 24 of 52

Marks: 1 (Budgeted Time 1 Min)

Let x, y, z be the length, width and height of a rectangular box. The area of bottom will be _____

Answer (Please select your correct option)

VuAnswers.com

$A = yz$

$A = xz$

$A = xy$

correct

$A = xyz$

Made by: Waqar Siddhu

Question No : 22 of 52

Marks: 1 (Budgeted Time 1 Min)

Suppose $f(x, y) = x^3 e^{xy}$. Which of the following options is correct?

Answer (Please select your correct option)

VuAnswers.com

$\frac{\partial f}{\partial y} = 3x^3 e^{xy}$

$\frac{\partial f}{\partial y} = x^3 e^{xy}$

$\frac{\partial f}{\partial y} = x^4 e^{xy}$

$\frac{\partial f}{\partial y} = x^3 y e^{xy}$

correct

Made by: Waqar Siddhu

Question No : 21 of 52

Marks: 1 (Budgeted Time 1 Min)

Domain of the function $f(x, y, z) = \sqrt{x^2 + y^2 + z^2}$ is

Answer (Please select your correct option)

VuAnswers.com

Entire 3D-Space

correct

Entire 3D-Space except origin

First octant of 3D-Space

Made by: Waqar Siddhu

Question No : 19 of 52

Marks: 1 (Budgeted Time 1 Min)

Equation of the circular disk with radius a and origin at $(0, 0)$ is given by

Answer (Please select your correct option)

VuAnswers.com

$x^2 + y^2 = a^2$

correct

$x^2 + y^2 \geq a^2$

$x^2 + y^2 \leq a^2$

Made by: Waqar Siddhu

Question No : 18 of 52

Marks: 1 (Budgeted Time 1 Min)

Consider the interval $(-1, 5)$ on co-ordinate line. What does this interval denote?

Answer (Please select your correct option)

VuAnswers.com

The set of all real numbers between -1 and 5

correct

The set of all integers between -1 and 5

The set of all natural numbers between -1 and 5

The set of all rational numbers between -1 and 5

Made by: Waqar Siddhu

Question No : 17 of 52

Marks: 1 (Budgeted Time 1 Min)

Which of the following is associated to each point on a plane?

Answer (Please select your correct option)

VuAnswers.com

A real number

correct

A natural number

An ordered pair

Made by: Waqar Siddhu

Question No : 15 of 52

Marks: 1 (Budgeted Time 1 Min)

Divergence of a vector function is always a -----

Answer (Please select your correct option)

VuAnswers.com

Scalar

correct

Vector

Made by: Waqar Siddhu

Question No : 16 of 52

Marks: 1 (Budgeted Time 1 Min)

If p is the period of a function then that function is said to be periodic if $f(x + p) = f(x)$, _____

Answer (Please select your correct option)

VuAnswers.com

For all values of x in the domain of f

correct

For positive values of x in the domain of f

For negative values of x in the domain of f

Made by: Waqar Siddhu

Question No : 14 of 52

Marks: 1 (Budgeted Time 1 Min)

What is Laplace Inverse Transform of $\frac{s}{s^2 + 25}$

Answer (Please select your correct option)

VuAnswers.com

$L^{-1}\left\{\frac{s}{s^2 + 25}\right\} = \sin 5t$

$L^{-1}\left\{\frac{s}{s^2 + 25}\right\} = \cos 5t$

$L^{-1}\left\{\frac{s}{s^2 + 25}\right\} = \sin 25t$

$L^{-1}\left\{\frac{s}{s^2 + 25}\right\} = \cos 25t$

Made by: Waqar Siddhu

Question No : 11 of 52

Marks: 1 (Budgeted Time 1 Min)

What is the value of $L(e^{5t})$ if L denotes laplace transform?

Answer (Please select your correct option)

VuAnswers.com

$L(e^{5t}) = \frac{1}{s-5}$

correct

$L(e^{5t}) = \frac{s}{s^2+25}$

$L(e^{5t}) = \frac{5}{s^2+25}$

$L(e^{5t}) = \frac{5!}{s^6}$

Made by: Waqar Siddhu

Question No : 13 of 52

Marks: 1 (Budgeted Time 1 Min)

If L denotes laplace transform then
 $L\{te^{5t}\} =$

Answer (Please select your correct option)

VuAnswers.com

$L\{te^{5t}\} = \frac{1}{s^2 - 5}$

$L\{te^{5t}\} = \frac{1}{s^2 + 5}$

$L\{te^{5t}\} = \frac{1}{(s + 5)^2}$

$L\{te^{5t}\} = \frac{1}{(s - 5)^2}$

correct

Made by: Waqar Siddhu

Question No : 12 of 52

Marks: 1 (Budgeted Time 1 Min)

What is laplace transform of the function $F(t)$ if $F(t) = \sin 3t$?

Answer (Please select your correct option)

VuAnswers.com

$L(\sin 3t) = \frac{3}{s^2 + 9}$

correct

$L(\sin 3t) = \frac{s}{s^2 + 9}$

$L(\sin 3t) = \frac{1}{s - 3}$

$L(\sin 3t) = \frac{3!}{s^4}$

Made by: Waqar Siddhu

Question No : 10 of 52

Marks: 1 (Budgeted Time 1 Min)

Which of the following is Laplace inverse transform of the function $f(s)$ defined by $f(s) = \frac{3}{s-2} - \frac{2}{s}$?

Answer (Please select your correct option)

VuAnswers.com

$3te^{2t} - 2$

$3e^{2t} - 2t$

$3e^{2t} - 2$

correct

None of these.

Made by: Waqar Siddhu

Question No : 8 of 52

Marks: 1 (Budgeted Time 1 Min)

The function $f(x) = x^3 e^x$ is

Answer (Please select your correct option)

VuAnswers.com

Even function

Odd function

Neither even nor odd

correct

Made by: Waqar Siddhu

Question No : 9 of 52

Marks: 1 (Budgeted Time 1 Min)

The graph of an even function is symmetrical about -----

Answer (Please select your correct option)

VuAnswers.com

x-axis

y-axis

correct

origin

Made by: Waqar Siddhu

Question No : 7 of 52

Marks: 1 (Budgeted Time 1 Min)

What is the period of periodic function whose graph is as below?



Answer (Please select your correct option)

VuAnswers.com

0

2.25

3

correct

6

Made by: Waqar Siddhu

Question No : 6 of 52

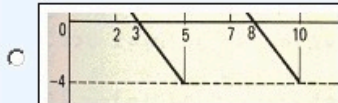
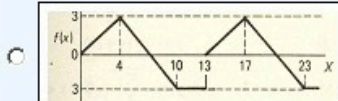
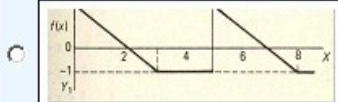
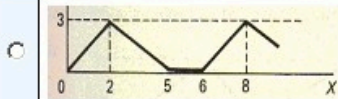
Marks: 1 (Budgeted Time 1 Min)

Match the following periodic function with its graph.

$$f(x) = \begin{cases} \frac{3}{4}x & 0 < x < 4 \\ 7 - x & 4 < x < 10 \\ -3 & 10 < x < 13 \end{cases}$$

Answer (Please select your correct option)

VuAnswers.com



Made by: Waqar Siddhu

Question No : 6 of 52

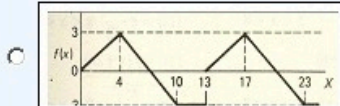
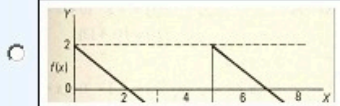
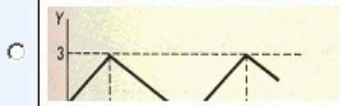
Marks: 1 (Budgeted Time 1 Min)

Match the following periodic function with its graph.

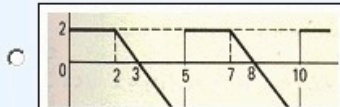
$$f(x) = \begin{cases} \frac{3}{4}x & 0 < x < 4 \\ 7 - x & 4 < x < 10 \\ -3 & 10 < x < 13 \end{cases}$$

Answer (Please select your correct option)

VuAnswers.com



correct



Made by: Waqar Siddhu

Question No : 5 of 52

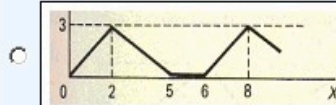
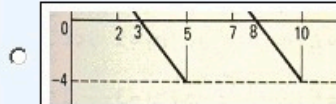
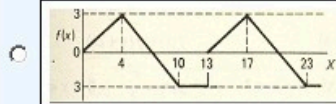
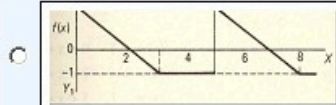
Marks: 1 (Budgeted Time 1 Min)

Match the following periodic function with its graph.

$$f(x) = \begin{cases} 2-x & 0 < x < 3 \\ -1 & 3 < x < 5 \end{cases}$$

Answer (Please select your correct option)

VuAnswers.com



Made by: Waqar Siddhu

Question No : 4 of 52

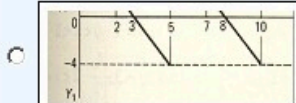
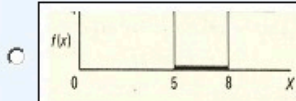
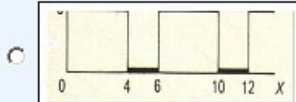
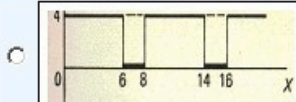
Marks: 1 (Budgeted Time 1 Min)

Match the following periodic function with its graph.

$$f(x) = \begin{cases} 4 & 0 < x < 5 \\ 0 & 5 < x < 8 \end{cases}$$

Answer (Please select your correct option)

VuAnswers.com



Made by: Waqar Siddhu

Question No : 5 of 52

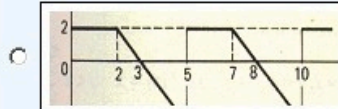
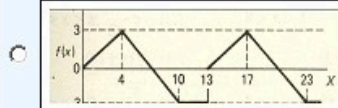
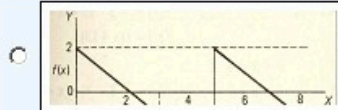
Marks: 1 (Budgeted Time 1 Min)

Match the following periodic function with its graph.

$$f(x) = \begin{cases} 2-x & 0 < x < 3 \\ -1 & 3 < x < 5 \end{cases}$$

Answer (Please select your correct option)

VuAnswers.com



Made by: Waqar Siddhu

Question No : 4 of 52

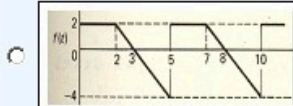
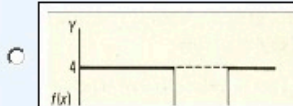
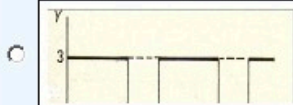
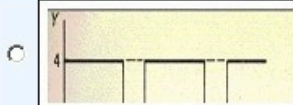
Marks: 1 (Budgeted Time 1 Min)

Match the following periodic function with its graph.

$$f(x) = \begin{cases} 4 & 0 < x < 5 \\ 0 & 5 < x < 8 \end{cases}$$

Answer (Please select your correct option)

VuAnswers.com



Made by: Waqar Siddhu

Question No : 3 of 52

Marks: 1 (Budgeted Time 1 Min)

What is the period of a periodic function defined by $f(x) = \sin \frac{x}{2}$?

Answer (Please select your correct option)

VuAnswers.com

$\frac{\pi}{2}$

π

correct

$\frac{3\pi}{2}$

4π

Made by: Waqar Siddhu

Question No : 2 of 52

Marks: 1 (Budgeted Time 1 Min)

What is the amplitude of a periodic function defined by $f(x) = 4 \cos 3x$?

Answer (Please select your correct option)

VuAnswers.com

1

3

4

correct

12

Made by: Waqar Siddhu

Question No : 1 of 52

Marks: 1 (Budgeted Time 1 Min)

Which one of the following is correct Wallis Cosine formula when n is odd and $n \geq 3$?

Answer (Please select your correct option)

VuAnswers.com

$\int_0^{\frac{\pi}{2}} \cos^n x \, dx = \frac{\pi}{2} \frac{(n-1)}{n} \frac{(n-3)}{(n-2)} \frac{(n-5)}{(n-4)} \dots \frac{5}{6} \frac{3}{4} \frac{1}{2}$

$\int_0^{\frac{\pi}{2}} \cos^n x \, dx = \frac{\pi}{2} \frac{(n)}{(n-1)} \frac{(n-2)}{(n-3)} \frac{(n-4)}{(n-5)} \dots \frac{6}{5} \frac{4}{3} \frac{2}{1}$

$\int_0^{\frac{\pi}{2}} \cos^n x \, dx = \frac{(n)}{(n-1)} \frac{(n-2)}{(n-3)} \frac{(n-4)}{(n-5)} \dots \frac{6}{5} \frac{4}{3} \frac{2}{1}$

$\int_0^{\frac{\pi}{2}} \cos^n x \, dx = \frac{(n-1)}{n} \frac{(n-3)}{(n-2)} \frac{(n-5)}{(n-4)} \dots \frac{6}{7} \frac{4}{5} \frac{2}{3}$

correct Made by: Waqar Siddhu

Question No : 9 of 52

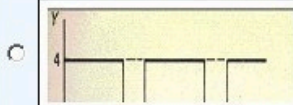
Marks: 1 (Budgeted Time 1 Min)

Match the following periodic function with its graph.

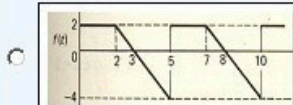
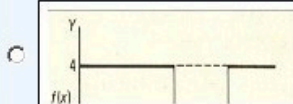
$$f(x) = \begin{cases} 4 & 0 < x < 6 \\ 0 & 6 < x < 8 \end{cases}$$

Answer (Please select your correct option)

VuAnswers.com



correct



Made by: Waqar Siddhu

Question No : 7 of 52

Marks: 1 (Budgeted Time 1 Min)

What is the period of a periodic function defined by $f(x) = \sin \frac{x}{2}$?

Answer (Please select your correct option)

VuAnswers.com

$\frac{\pi}{2}$

π

$\frac{3\pi}{2}$

4π

Made by: Waqar Siddhu

Question No : 8 of 52

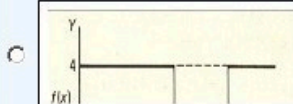
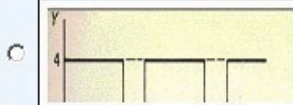
Marks: 1 (Budgeted Time 1 Min)

Match the following periodic function with its graph.

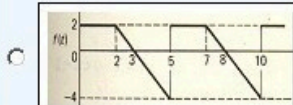
$$f(x) = \begin{cases} 4 & 0 < x < 5 \\ 0 & 5 < x < 8 \end{cases}$$

Answer (Please select your correct option)

VuAnswers.com



correct



Made by: Waqar Siddhu

Question No : 6 of 52

Marks: 1 (Budgeted Time 1 Min)

What is the period of a periodic function defined by $f(x) = 4 \sin 2x$?

Answer (Please select your correct option)

VuAnswers.com

- 2°
- 4°
- 8°
- 180°
- 360°

correct

Made by: Waqar Siddhu

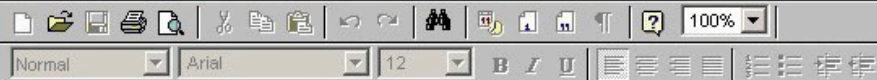
Show that Laplace transform of the function

$$f(t) = 1 \quad \text{is}$$

$\frac{1}{s}$ where s is a constant for the integration and $s > 0$.

Answer (Please [click here](#) to Add Answer)

VuAnswers.com



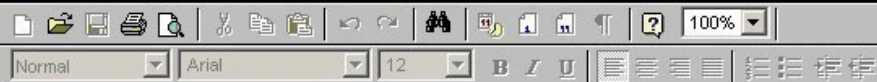
Made by: Waqar Siddhu

Determine whether the following vector field \vec{F} is conservative or not.

$$\vec{F}(x, y, z) = (4x - z)\hat{i} + (3y + z)\hat{j} + (y - x)\hat{k}$$

Answer (Please [click here](#) to Add Answer)

VuAnswers.com



Made by: Waqar Siddhu

Question No : 5 of 52

Marks: 1 (Budgeted Time 1 Min)

What is the amplitude of a periodic function defined by $f(x) = 4 \cos 3x$?

Answer (Please select your correct option)

VuAnswers.com

1

3

4

correct

12

Made by: Waqar Siddhu

Question No : 48 of 52

Marks: 3 (Budgeted Time 6 Min)

A line, in three dimensional space, passes through the point $(3, -4, 2)$ and parallel to the vector $\vec{n} = 4\hat{i} + 3\hat{j} + 6\hat{k}$. Write down the equation of this line in parametric and symmetric form.

Answer (Please [click here](#) to Add Answer)

VuAnswers.com

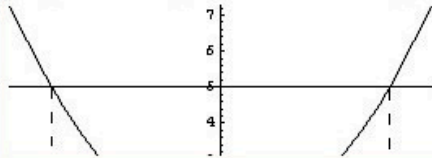


Made by: Waqar Siddhu

Question No : 49 of 52

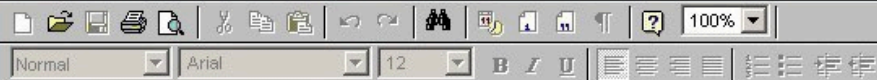
Marks: 5 (Budgeted Time 10 Min)

Using definite integral, find area of the region bounded by the curves of $y = x^2 + 1$ and $y = 5$



Answer (Please [click here](#) to Add Answer)

VuAnswers.com



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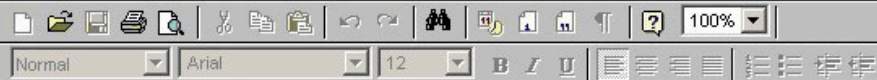
Question No : 46 of 52

Marks: 3 (Budgeted Time 6 Min)

Find $\text{div } \vec{F}$, if $\vec{F} = (3x + y)\hat{i} + xy^2z\hat{j} + (xz^2)\hat{k}$

Answer (Please [click here](#) to Add Answer)

VuAnswers.com



Made by: Waqar Siddhu

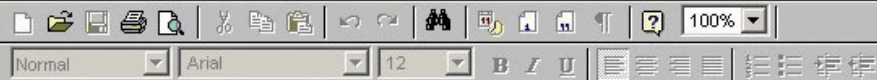
Question No : 45 of 52

Marks: 3 (Budgeted Time 6 Min)

What is the arc-length of the curve $\vec{r}(t) = (4+3t)\hat{i} + (2-2t)\hat{j} + (5+t)\hat{k}$ when $3 \leq t \leq 4$?

Answer (Please [click here](#) to Add Answer)

VuAnswers.com



Made by: Waqar Siddhu

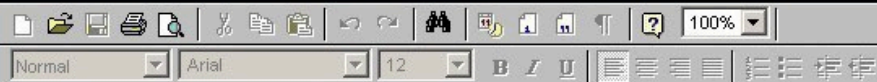
Question No : 44 of 52

Marks: 2 (Budgeted Time 4 Min)

Given $\vec{a} \times \vec{b} = 3xi + 2yj + zk$ and $\vec{c} = 7xi + 4yk$. Find scalar triple product of these vectors.

Answer (Please [click here](#) to Add Answer)

VuAnswers.com



Made by: Waqar Siddhu

Question No : 43 of 52

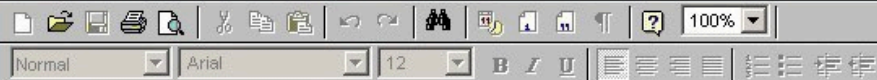
Marks: 2 (Budgeted Time 4 Min)

Prove whether the following function is even, odd or neither.

$$f(x) = x^2 - 4 \sin x$$

Answer (Please [click here](#) to Add Answer)

VuAnswers.com



Made by: Waqar Siddhu

Question No : 41 of 52

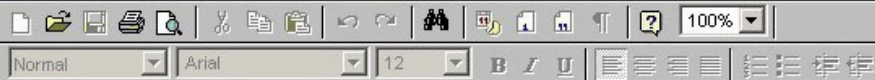
Marks: 2 (Budgeted Time 4 Min)

Determine whether the following differential is exact or not.

$$dz = 4x^3y^3 dx + 3x^4y^2 dy$$

Answer (Please [click here](#) to Add Answer)

VuAnswers.com



Made by: Waqar Siddhu

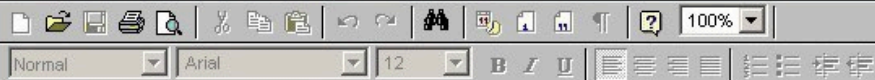
Evaluate

$$\int_{-x}^x \cos nx \, dx$$

where n is an integer other than zero.

Answer (Please [click here](#) to Add Answer)

VuAnswers.com

**Made by: Waqar Siddhu**

Question No : 4 of 52

Marks: 1 (Budgeted Time 1 Min)

The following differential is exact

$$dz = (6xy + 2y^2 - 5) dx + (3x^2 + 4xy - 6) dy$$

Answer (Please select your correct option)

VuAnswers.com

True

correct

False

Made by: Waqar Siddhu

Given the integral $\iint_R f(x,y) dx dy$, after converting to polar coordinates, it will become $\int_a^b \int_c^d f(r,\theta) r dr d\theta$ where $a \leq \theta \leq b$ and $c \leq r \leq d$.

Answer (Please select your correct option)

VuAnswers.com

$\int_a^b \int_c^d f(r,\theta) r dr d\theta$

$\int_a^b \int_c^d f(r,\theta) dr d\theta$

$\int_a^b \int_c^d f(r,\theta) r d\theta dr$

$\int_a^b \int_c^d f(r,\theta) d\theta dr$

Made by: Waqar Siddhu

Question No : 38 of 52

Marks: 1 (Budgeted Time 1 Min)

If $p(r, \theta)$ is a point in polar coordinate system, then r is the distance of p from

Answer (Please select your correct option)

VuAnswers.com

Pole

Imaginary axis

None of these

Polar axis

Made by: Waqar Siddhu

The point $p(0, \theta)$ in polar coordinate system lies on

Answer (Please select your correct option)

VuAnswers.com

Polar axis

y-axis

Pole

None of these

Made by: Waqar Siddhu

The graph of curve $r^2 = 4 \cos 2 \theta$ is symmetric about

Answer (Please select your correct option)

VuAnswers.com

Initial line

correct

y-axis

both initial line and y-axis

none of these

Made by: Waqar Siddhu

If the equation of a curve, in polar co-ordinates, remains unchanged after replacing (r, θ) by $(r, -\theta)$ then the curve is said to be symmetric about

Answer (Please select your correct option)

VuAnswers.com

Initial line

y-axis

correct

Pole

origin

Made by: Waqar Siddhu

Question No : 35 of 52

Marks: 1 (Budgeted Time 1 Min)

Polar co-ordinates of a point are $\left(-2, \frac{-3\pi}{2}\right)$. Which of the following is another possible polar co-ordinates representation of this point?

Answer (Please select your correct option)

VuAnswers.com

$\left(2, \frac{-\pi}{4}\right)$

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

$\left(2, \frac{-\pi}{3}\right)$

$\left(2, \frac{3\pi}{4}\right)$

Made by: Waqar Siddhu

Question No : 34 of 52

Marks: 1 (Budgeted Time 1 Min)

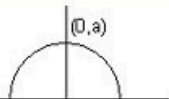
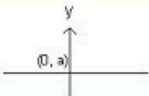
Match the following equation in polar co-ordinates with its graph.

$$r \cos \theta = a$$

where a is an arbitrary constant

Answer (Please select your correct option)

VuAnswers.com



Made by: Waqar Siddhu

Let R be a closed region in two dimensional space then the double integral over R calculates.

Answer (Please select your correct option)

VuAnswers.com

Area of R

Radius of inscribed circle in R.

Distance between two endpoints of R.

None of these

Made by: Waqar Siddhu

If $R = \{(x, y) : 2 \leq x \leq 4 \text{ and } 0 \leq y \leq 1\}$, then $\iint_R (4xe^{2y}) dA = \dots\dots\dots$

Answer (Please select your correct option)

VuAnswers.com

$\int_0^1 \int_2^4 (4xe^{2y}) dy dx$

$\int_0^1 \int_2^4 (4xe^{2y}) dx dy$

$\int_1^4 \int_0^2 (4xe^{2y}) dx dy$

$\int_1^4 \int_0^2 (4xe^{2y}) dy dx$

Made by: Waqar Siddhu

Two surfaces are said to be orthogonal at the point of their intersection if their normals at that point are -----

Answer (Please select your correct option)

VuAnswers.com

Parallel

Perpendicular

correct

In opposite direction

Overlapping

Made by: Waqar Siddhu

For a function $f(x,y)$ to have both absolute maximum and minimum, it must be Continuous on set R.

Answer (Please select your correct option)

VuAnswers.com

a closed and bounded

an open and bounded

a closed and unbounded

an open and unbounded

Made by: Waqar Siddhu

Evaluate the integral $\int [(3t-1)\hat{i} + \sqrt{t}\hat{j}] dt$

Answer (Please select your correct option)

VuAnswers.com

$\int [(3t-1)\hat{i} + \sqrt{t}\hat{j}] dt = \left(\frac{3}{2}t^2 - t\right)\hat{i} + \left(\frac{3}{2}t^{\frac{3}{2}}\right)\hat{j} + C$

$\int [(3t-1)\hat{i} + \sqrt{t}\hat{j}] dt = \left(\frac{3}{2}t^2 - t\right)\hat{i} + \left(\frac{2}{3}t^{\frac{3}{2}}\right)\hat{j} + C$

correct

$\int [(3t-1)\hat{i} + \sqrt{t}\hat{j}] dt = \left(\frac{3}{2}t - t\right)\hat{i} + \left(\frac{2}{3}t^{\frac{3}{2}}\right)\hat{j} + C$

$\int [(3t-1)\hat{i} + \sqrt{t}\hat{j}] dt = \left(\frac{3}{2}t^2 - t\right)\hat{i} + \left(\frac{1}{2}t^{\frac{3}{2}}\right)\hat{j} + C$

Made by: Waqar Siddhu

The function decreases most rapidly in the direction of

Answer (Please select your correct option)

VuAnswers.com

$-\nabla f$

correct

$-\|\nabla f\|$

$\nabla f \times \hat{a}$

$\|\nabla f\|$

Made by: Waqar Siddhu

Question No : 28 of 52

Marks: 1 (Budgeted Time 1 Min)

Suppose $f(x, y) = x^3 e^{xy}$. Which of the following options is correct?

Answer (Please select your correct option)

VuAnswers.com

$\frac{\partial f}{\partial y} = 3x^3 e^{xy}$

$\frac{\partial f}{\partial y} = x^3 e^{xy}$

$\frac{\partial f}{\partial y} = x^4 e^{xy}$

correct

$\frac{\partial f}{\partial y} = x^3 y e^{xy}$

Made by: Waqar Siddhu

Question No : 27 of 52

Marks: 1 (Budgeted Time 1 Min)

If rectangular co-ordinates of a point are $(1, \sqrt{3}, -2)$, then value of "r" in cylindrical co-ordinates is

Answer (Please select your correct option)

VuAnswers.com

$\sqrt{2}$

2

$2\sqrt{2}$

$-2\sqrt{2}$

Made by: Waqar Siddhu

$\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2 + (z_2 - z_1)^2}$ shows (x_1, y_1, z_1) and (x_2, y_2, z_2) .

Answer (Please select your correct option)

VuAnswers.com

Distance between the points

correct

Midpoint of the line joining the points

Ratio between the points

Made by: Waqar Siddhu

Domain of the function $f(x, y) = \sqrt{y - x^2}$ satisfies the condition

Answer (Please select your correct option)

VuAnswers.com

$y < x^2$

$y \geq x^2$

correct

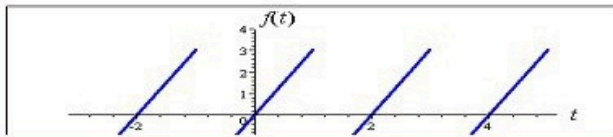
$y \neq x^2$

Entire space

Made by: Waqar Siddhu

Question No : 23 of 52

Marks: 1 (Budgeted Time 1 Min)



Answer (Please select your correct option)

VuAnswers.com

An odd function

An even function

Neither even nor odd

Made by: Waqar Siddhu

Question No : 24 of 52

Marks: 1 (Budgeted Time 1 Min)

Which of the following set is the union of sets of rational and irrational numbers?

Answer (Please select your correct option)

VuAnswers.com

Set of rational numbers

Set of integers

Set of real numbers

correct

Empty set.

Made by: Waqar Siddhu

If p is the period of a function then that function is said to be periodic if $f(x + p) = f(x)$, _____

Answer (Please select your correct option)

VuAnswers.com

For all values of x in the domain of f

correct

For positive values of x in the domain of f

For negative values of x in the domain of f

Made by: Waqar Siddhu

Question No : 22 of 52

Marks: 1 (Budgeted Time 1 Min)

A vector field is a vector each of whose components is a scalar field

Answer (Please select your correct option)

VuAnswers.com

True

False

correct

Made by: Waqar Siddhu

Question No : 20 of 52

Marks: 1 (Budgeted Time 1 Min)

Evaluate the line integral $\int_C (xy) dx + (1+y^2) dy$ where C is the line segment from $(1, 0)$ to $(3, 0)$.

Answer (Please select your correct option)

VuAnswers.com

-4

0

correct

4

Do not exist

Made by: Waqar Siddhu

Question No : 2 of 52

Marks: 1 (Budgeted Time 1 Min)

What is the derivative of following vector-valued function?

$$\vec{r}(t) = (e^{t^2}, t^2, \sec 2t)$$

Answer (Please select your correct option)

VuAnswers.com

$\vec{r}'(t) = (2te^{t^2}, 2t, 2 \sec 2t \tan 2t)$

$\vec{r}'(t) = (te^{t^2}, 2t, \sec 2t \tan 2t)$

correct

$\vec{r}'(t) = (2te^{t^2}, 2t, \tan 2t)$

$\vec{r}'(t) = (t^2 e^{t^2}, 2t, \sec 2t \tan 2t)$

Made by: Waqar Siddhu

Question No : 19 of 52

Marks: 1 (Budgeted Time 1 Min)

Evaluate the line integral $\int_C (3x + 2y) dx + (2x - y) dy$ where C is the line segment from $(0, 0)$ to $(0, 2)$.

Answer (Please select your correct option)

VuAnswers.com

1

0

2

correct

-2

Made by: Waqar Siddhu

Question No : 18 of 52

Marks: 1 (Budgeted Time 1 Min)

What is Laplace Inverse Transform of $\frac{5}{s^2 + 25}$

Answer (Please select your correct option)

VuAnswers.com

$L^{-1}\left\{\frac{5}{s^2 + 25}\right\} = \sin 5t$

correct

$L^{-1}\left\{\frac{5}{s^2 + 25}\right\} = \cos 5t$

$L^{-1}\left\{\frac{5}{s^2 + 25}\right\} = \sin 25t$

$L^{-1}\left\{\frac{5}{s^2 + 25}\right\} = \cos 25t$

Made by: Waqar Siddhu

Question No : 17 of 52

Marks: 1 (Budgeted Time 1 Min)

What is laplace transform of the function $F(t)$ if $F(t) = \cos 2t$?

Answer (Please select your correct option)

VuAnswers.com

$L(\cos 2t) = \frac{2}{s^2 + 4}$

correct

$L(\cos 2t) = \frac{1}{s-2}$

$L(\cos 2t) = \frac{s}{s^2 + 4}$

$L(\cos 2t) = \frac{2!}{s^3}$

Made by: Waqar Siddhu

Sign of line integral is reversed when -----

Answer (Please select your correct option)

VuAnswers.com

path of integration is divided into parts.

path of integration is parallel to y-axis.

direction of path of integration is reversed.

correct

path of integration is parallel to x-axis.

Made by: Waqar Siddhu

The graph of an even function is symmetrical about -----

Answer (Please select your correct option)

VuAnswers.com

x-axis

y-axis

correct

origin

Made by: Waqar Siddhu

Question No : 15 of 52

Marks: 1 (Budgeted Time 1 Min)

The graph of an odd function is symmetrical about -----

Answer (Please select your correct option)

VuAnswers.com

x-axis

y-axis

origin

correct

Made by: Waqar Siddhu

Question No : 13 of 52

Marks: 1 (Budgeted Time 1 Min)

The function $f(x) = x^2 \cos 2x$ is -----

Answer (Please select your correct option)

VuAnswers.com

Neither even nor odd

Odd function

Even function

correct

Made by: Waqar Siddhu

Question No : 12 of 52

Marks: 1 (Budgeted Time 1 Min)

Let L denotes the Laplace Transform.

If $L\{F(t)\} = f(s)$ where s is a constant and $\lim_{t \rightarrow 0} \left(\frac{F(t)}{t} \right)$ exists then which of the following equation holds?

Answer (Please select your correct option)

VuAnswers.com

$L\left(\frac{F(t)}{t}\right) = f(s+a)$

$L\left(\frac{F(t)}{t}\right) = f(s-a)$

$L\left(\frac{F(t)}{t}\right) = \int_s^{\infty} f(s) ds$

correct

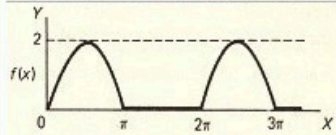
$L\left(\frac{F(t)}{t}\right) = -\frac{d}{ds}(f(s))$

Made by: Waqar Siddhu

Question No : 10 of 52

Marks: 1 (Budgeted Time 1 Min)

What is the period of periodic function whose graph is as below?



Answer (Please select your correct option)

VuAnswers.com

0

2

π

2π

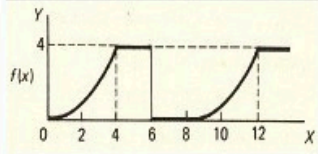
correct

Made by: Waqar Siddhu

Question No : 11 of 52

Marks: 1 (Budgeted Time 1 Min)

What is the period of periodic function whose graph is as below?



Answer (Please select your correct option)

VuAnswers.com

0

4

6

8

correct

Made by: Waqar Siddhu

Question No : 1 of 52

Marks: 1 (Budgeted Time 1 Min)

What is the derivative of following vector-valued function?

$$\vec{r}(t) = \left(t^4, \sqrt{t+1}, \frac{3}{t^2} \right)$$

Answer (Please select your correct option)

VuAnswers.com

$\vec{r}'(t) = \left(4t^3, \frac{1}{\sqrt{t+1}}, \frac{-6}{t^3} \right)$

$\vec{r}'(t) = \left(4t^3, \frac{1}{2\sqrt{t+1}}, \frac{6}{t^3} \right)$

$\vec{r}'(t) = \left(4t^4, \frac{1}{2\sqrt{t+1}}, \frac{-6}{t^3} \right)$

$\vec{r}'(t) = \left(4t^3, \frac{1}{2\sqrt{t+1}}, \frac{-6}{t^3} \right)$

correct

Made by: Waqar Siddhu

Question No : 36 of 52

Marks: 1 (Budgeted Time 1 Min)

If the equation of a curve, in polar co-ordinates, remains unchanged after replacing (r, θ) by $(r, -\theta)$ then the curve is said to be symmetric about

Answer (Please select your correct option)

VuAnswers.com

Initial line

y-axis

correct

Pole

origin

Made by: Waqar Siddhu

Question No : 35 of 52

Marks: 1 (Budgeted Time 1 Min)

Polar co-ordinates of a point are $\left(-2, \frac{-3\pi}{2}\right)$. Which of the following is another possible polar co-ordinates representation of this point?

Answer (Please select your correct option)

VuAnswers.com

$\left(2, \frac{-\pi}{4}\right)$

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

$\left(2, \frac{-\pi}{3}\right)$

$\left(2, \frac{3\pi}{4}\right)$

Made by: Waqar Siddhu

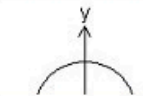
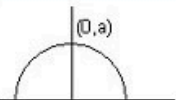
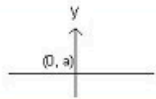
Question No : 34 of 52

Marks: 1 (Budgeted Time 1 Min)

Match the following equation in polar co-ordinates with its graph.
 $r \cos \theta = a$
where a is an arbitrary constant

Answer (Please select your correct option)

VuAnswers.com



Made by: Waqar Siddhu

Question No : 33 of 52

Marks: 1 (Budgeted Time 1 Min)

Let R be a closed region in two dimensional space then the double integral over R calculates.

Answer (Please select your correct option)

VuAnswers.com

- Area of R
- Radius of inscribed circle in R .
- Distance between two endpoints of R .
- None of these

Made by: Waqar Siddhu

Question No : 32 of 52

Marks: 1 (Budgeted Time 1 Min)

If $R = \{(x, y) : 2 \leq x \leq 4 \text{ and } 0 \leq y \leq 1\}$, then $\iint_R (4xe^{2y})dA = \dots\dots\dots$

Answer (Please select your correct option)

VuAnswers.com

$\int_0^1 \int_2^4 (4xe^{2y})dydx$

$\int_0^1 \int_2^4 (4xe^{2y})dxdy$

$\int_1^4 \int_0^2 (4xe^{2y})dxdy$

$\int_1^4 \int_0^2 (4xe^{2y})dydx$

Made by: Waqar Siddhu

Question No : 31 of 52

Marks: 1 (Budgeted Time 1 Min)

For a function $f(x,y)$ to have both absolute maximum and minimum, it must be Continuous on set R.

Answer (Please select your correct option)

VuAnswers.com

- a closed and bounded
- an open and bounded
- a closed and unbounded
- an open and unbounded

Made by: Waqar Siddhu

Question No : 30 of 52

Marks: 1 (Budgeted Time 1 Min)

Two surfaces are said to be orthogonal at the point of their intersection if their normals at that point are -----

Answer (Please select your correct option)

VuAnswers.com

Parallel



Perpendicular



correct

In opposite direction



Overlapping



Made by: Waqar Siddhu

Question No : 29 of 52

Marks: 1 (Budgeted Time 1 Min)

The function decreases most rapidly in the direction of

Answer (Please select your correct option)

VuAnswers.com

$-\nabla f$

correct

$-\|\nabla f\|$

$\nabla f \times \hat{a}$

$\|\nabla f\|$

Made by: Waqar Siddhu

Question No : 3 of 52

Marks: 1 (Budgeted Time 1 Min)

Evaluate the integral $\int [(3t-1)\hat{i} + \sqrt{t}\hat{j}] dt$

Answer (Please select your correct option)

VuAnswers.com

$\int [(3t-1)\hat{i} + \sqrt{t}\hat{j}] dt = \left(\frac{3}{2}t^2 - t\right)\hat{i} + \left(\frac{3}{2}t^{\frac{3}{2}}\right)\hat{j} + C$

$\int [(3t-1)\hat{i} + \sqrt{t}\hat{j}] dt = \left(\frac{3}{2}t^2 - t\right)\hat{i} + \left(\frac{2}{3}t^{\frac{3}{2}}\right)\hat{j} + C$

correct

$\int [(3t-1)\hat{i} + \sqrt{t}\hat{j}] dt = \left(\frac{3}{2}t - t\right)\hat{i} + \left(\frac{2}{3}t^{\frac{3}{2}}\right)\hat{j} + C$

$\int [(3t-1)\hat{i} + \sqrt{t}\hat{j}] dt = \left(\frac{3}{2}t^2 - t\right)\hat{i} + \left(\frac{1}{2}t^{\frac{3}{2}}\right)\hat{j} + C$

Made by: Waqar Siddhu

Question No : 28 of 52

Marks: 1 (Budgeted Time 1 Min)

Suppose $f(x, y) = x^3 e^{xy}$. Which of the following options is correct?

Answer (Please select your correct option)

VuAnswers.com

$\frac{\partial f}{\partial y} = 3x^3 e^{xy}$

$\frac{\partial f}{\partial y} = x^3 e^{xy}$

$\frac{\partial f}{\partial y} = x^4 e^{xy}$

correct

$\frac{\partial f}{\partial y} = x^3 y e^{xy}$

Made by: Waqar Siddhu

Question No : 27 of 52

Marks: 1 (Budgeted Time 1 Min)

If rectangular co-ordinates of a point are $(1, \sqrt{3}, -2)$, then value of "r" in cylindrical co-ordinates is

Answer (Please select your correct option)

VuAnswers.com

$\sqrt{2}$

2

$2\sqrt{2}$

$-2\sqrt{2}$

Made by: Waqar Siddhu

Question No : 26 of 52

Marks: 1 (Budgeted Time 1 Min)

Domain of the function $f(x, y) = \sqrt{y - x^2}$ satisfies the condition

Answer (Please select your correct option)

VuAnswers.com

$y < x^2$

$y \geq x^2$

correct

$y \neq x^2$

Entire space

Made by: Waqar Siddhu

Question No : 25 of 52

Marks: 1 (Budgeted Time 1 Min)

$\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2 + (z_2 - z_1)^2}$ shows (x_1, y_1, z_1) and (x_2, y_2, z_2) .

Answer (Please select your correct option)

VuAnswers.com

Distance between the points

correct

Midpoint of the line joining the points

Ratio between the points

Made by: Waqar Siddhu

Question No : 24 of 52

Marks: 1 (Budgeted Time 1 Min)

Which of the following set is the union of sets of rational and irrational numbers?

Answer (Please select your correct option)

VuAnswers.com

Set of rational numbers

Set of integers

Set of real numbers

correct

Empty set.

Made by: Waqar Siddhu

Question No : 22 of 52

Marks: 1 (Budgeted Time 1 Min)

A vector field is a vector each of whose components is a scalar field

Answer (Please select your correct option)

VuAnswers.com

True

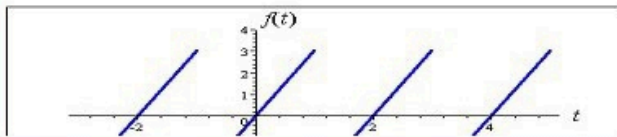
False

correct

Made by: Waqar Siddhu

Question No : 23 of 52

Marks: 1 (Budgeted Time 1 Min)



Answer (Please select your correct option)

VuAnswers.com

An odd function

An even function

Neither even nor odd

Made by: Waqar Siddhu

Question No : 21 of 52

Marks: 1 (Budgeted Time 1 Min)

If p is the period of a function then that function is said to be periodic if $f(x + p) = f(x)$, _____

Answer (Please select your correct option)

VuAnswers.com

For all values of x in the domain of f

correct

For positive values of x in the domain of f

For negative values of x in the domain of f

Made by: Waqar Siddhu

Question No : 20 of 52

Marks: 1 (Budgeted Time 1 Min)

Evaluate the line integral $\int_C (xy) dx + (1 + y^2) dy$ where C is the line segment from $(1, 0)$ to $(3, 0)$.

Answer (Please select your correct option)

VuAnswers.com

-4

0

correct

4

Do not exist

Made by: Waqar Siddhu

Question No : 2 of 52

Marks: 1 (Budgeted Time 1 Min)

What is the derivative of following vector-valued function?

$$\vec{r}(t) = (e^{t^2}, t^2, \sec 2t)$$

Answer (Please select your correct option)

VuAnswers.com

$\vec{r}'(t) = (2te^{t^2}, 2t, 2 \sec 2t \tan 2t)$

$\vec{r}'(t) = (te^{t^2}, 2t, \sec 2t \tan 2t)$

correct

$\vec{r}'(t) = (2te^{t^2}, 2t, \tan 2t)$

$\vec{r}'(t) = (t^2e^{t^2}, 2t, \sec 2t \tan 2t)$

Made by: Waqar Siddhu

Question No : 19 of 52

Marks: 1 (Budgeted Time 1 Min)

Evaluate the line integral $\int_C (3x + 2y) dx + (2x - y) dy$ where C is the line segment from $(0, 0)$ to $(0, 2)$.

Answer (Please select your correct option)

VuAnswers.com

1

0

2

correct

-2

Made by: Waqar Siddhu

Question No : 18 of 52

Marks: 1 (Budgeted Time 1 Min)

What is Laplace Inverse Transform of $\frac{5}{s^2 + 25}$

Answer (Please select your correct option)

VuAnswers.com

$L^{-1}\left\{\frac{5}{s^2 + 25}\right\} = \sin 5t$

correct

$L^{-1}\left\{\frac{5}{s^2 + 25}\right\} = \cos 5t$

$L^{-1}\left\{\frac{5}{s^2 + 25}\right\} = \sin 25t$

$L^{-1}\left\{\frac{5}{s^2 + 25}\right\} = \cos 25t$

Made by: Waqar Siddhu

Question No : 17 of 52

Marks: 1 (Budgeted Time 1 Min)

What is laplace transform of the function $F(t)$ if $F(t) = \cos 2t$?

Answer (Please select your correct option)

VuAnswers.com

$L(\cos 2t) = \frac{2}{s^2 + 4}$

correct

$L(\cos 2t) = \frac{1}{s-2}$

$L(\cos 2t) = \frac{s}{s^2 + 4}$

$L(\cos 2t) = \frac{2!}{s^3}$

Made by: Waqar Siddhu

Question No : 16 of 52

Marks: 1 (Budgeted Time 1 Min)

Sign of line integral is reversed when -----

Answer (Please select your correct option)

VuAnswers.com

path of integration is divided into parts.

path of integration is parallel to y-axis.

direction of path of integration is reversed.

correct

path of integration is parallel to x-axis.

Made by: Waqar Siddhu

Question No : 14 of 52

Marks: 1 (Budgeted Time 1 Min)

The graph of an even function is symmetrical about -----

Answer (Please select your correct option)

VuAnswers.com

x-axis

y-axis

correct

origin

Made by: Waqar Siddhu

Question No : 15 of 52

Marks: 1 (Budgeted Time 1 Min)

The graph of an odd function is symmetrical about -----

Answer (Please select your correct option)

VuAnswers.com

x-axis

y-axis

origin

correct

Made by: Waqar Siddhu

Question No : 13 of 52

Marks: 1 (Budgeted Time 1 Min)

The function $f(x) = x^2 \cos 2x$ is -----

Answer (Please select your correct option)

VuAnswers.com

Neither even nor odd

Odd function

Even function

correct

Made by: Waqar Siddhu

Question No : 12 of 52

Marks: 1 (Budgeted Time 1 Min)

Let L denotes the Laplace Transform.

If $L(F(t)) = f(s)$ where s is a constant and $\lim_{t \rightarrow 0} \left(\frac{F(t)}{t} \right)$ exists then which of the following equation holds?

Answer (Please select your correct option)

VuAnswers.com

$L\left(\frac{F(t)}{t}\right) = f(s+a)$

$L\left(\frac{F(t)}{t}\right) = f(s-a)$

$L\left(\frac{F(t)}{t}\right) = \int_0^{\infty} f(s) ds$

correct

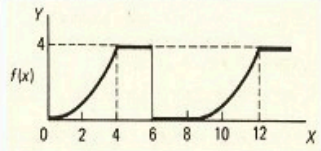
$L\left(\frac{F(t)}{t}\right) = -\frac{d}{ds}(f(s))$

Made by: Waqar Siddhu

Question No : 11 of 52

Marks: 1 (Budgeted Time 1 Min)

What is the period of periodic function whose graph is as below?



Answer (Please select your correct option)

VuAnswers.com

0

4

6

8

correct

Made by: Waqar Siddhu

Question No : 1 of 52

Marks: 1 (Budgeted Time 1 Min)

What is the derivative of following vector-valued function?

$$\vec{r}(t) = \left(t^4, \sqrt{t+1}, \frac{3}{t^2} \right)$$

Answer (Please select your correct option)

VuAnswers.com

$\vec{r}'(t) = \left(4t^3, \frac{1}{\sqrt{t+1}}, \frac{-6}{t^3} \right)$

$\vec{r}'(t) = \left(4t^3, \frac{1}{2\sqrt{t+1}}, \frac{6}{t^3} \right)$

$\vec{r}'(t) = \left(4t^4, \frac{1}{2\sqrt{t+1}}, \frac{-6}{t^3} \right)$

$\vec{r}'(t) = \left(4t^3, \frac{1}{2\sqrt{t+1}}, \frac{-6}{t^3} \right)$

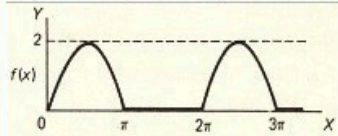
correct

Made by: Waqar Siddhu

Question No : 10 of 52

Marks: 1 (Budgeted Time 1 Min)

What is the period of periodic function whose graph is as below?



Answer (Please select your correct option)

VuAnswers.com

0

2

π

2π

correct

Made by: Waqar Siddhu

Question No : 9 of 52

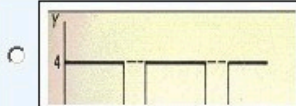
Marks: 1 (Budgeted Time 1 Min)

Match the following periodic function with its graph.

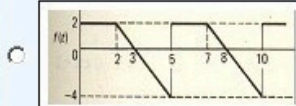
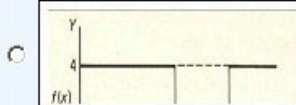
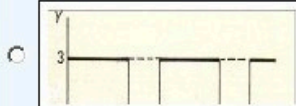
$$f(x) = \begin{cases} 4 & 0 < x < 6 \\ 0 & 6 < x < 8 \end{cases}$$

Answer (Please select your correct option)

VuAnswers.com



correct



Made by: Waqar Siddhu

Question No : 8 of 52

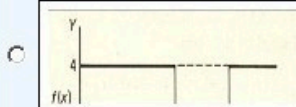
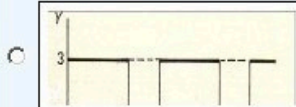
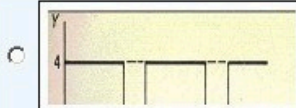
Marks: 1 (Budgeted Time 1 Min)

Match the following periodic function with its graph.

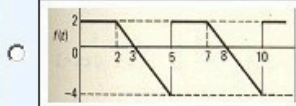
$$f(x) = \begin{cases} 4 & 0 < x < 5 \\ 0 & 5 < x < 8 \end{cases}$$

Answer (Please select your correct option)

VuAnswers.com



correct



Made by: Waqar Siddhu

Question No : 7 of 52

Marks: 1 (Budgeted Time 1 Min)

What is the period of a periodic function defined by $f(x) = \sin \frac{x}{2}$?

Answer (Please select your correct option)

VuAnswers.com

$\frac{\pi}{2}$

π

$\frac{3\pi}{2}$

4π

Made by: Waqar Siddhu

Question No : 6 of 52

Marks: 1 (Budgeted Time 1 Min)

What is the period of a periodic function defined by $f(x) = 4 \sin 2x$?

Answer (Please select your correct option)

VuAnswers.com

- 2°
- 4°
- 8°
- 180°
- 360°

correct

Made by: Waqar Siddhu

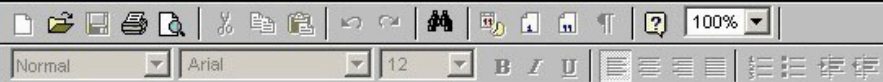
Question No : 52 of 52

Marks: 5 (Budgeted Time 10 Min)

Consider the point $(-5, 5, 6)$ in rectangular coordinate system. Convert it into Spherical coordinates.

Answer ([Please click here to Add Answer](#))

VuAnswers.com



Made by: Waqar Siddhu

Question No : 51 of 52

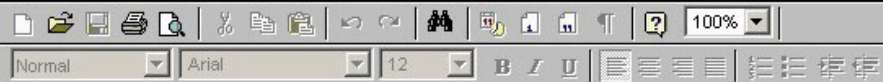
Marks: 5 (Budgeted Time 10 Min)

Determine whether the following vector field \vec{F} is conservative or not.

$$\vec{F}(x, y, z) = (4x - z)\hat{i} + (3y + z)\hat{j} + (y - x)\hat{k}$$

Answer ([Please click here to Add Answer](#))

VuAnswers.com



Made by: Waqar Siddhu

Question No : 50 of 52

Marks: 5 (Budgeted Time 10 Min)

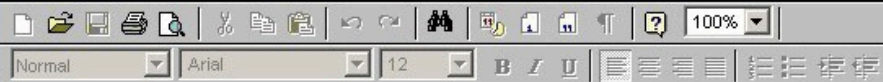
Show that Laplace transform of the function

$$f(t) = 1 \quad \text{is}$$

$\frac{1}{s}$ where s is a constant for the integration and $s > 0$.

Answer ([Please click here to Add Answer](#))

VuAnswers.com



Made by: Waqar Siddhu

Question No : 5 of 52

Marks: 1 (Budgeted Time 1 Min)

What is the amplitude of a periodic function defined by $f(x) = 4 \cos 3x$?

Answer (Please select your correct option)

VuAnswers.com

1

3

4

correct

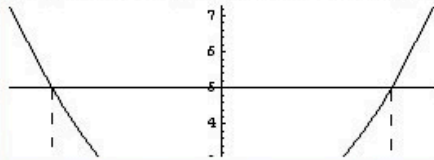
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Made by: Waqar Siddhu

Question No : 49 of 52

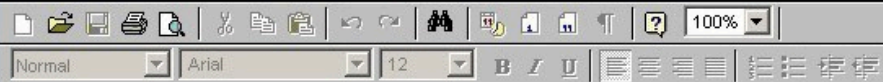
Marks: 5 (Budgeted Time 10 Min)

Using definite integral, find area of the region bounded by the curves of $y = x^2 + 1$ and $y = 5$



Answer (Please [click here](#) to Add Answer)

VuAnswers.com



Made by: Waqar Siddhu

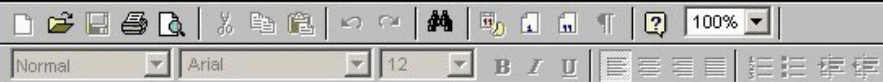
Question No : 48 of 52

Marks: 3 (Budgeted Time 6 Min)

A line, in three dimensional space, passes through the point $(3, -4, 2)$ and parallel to the vector $\vec{r} = 4\hat{i} + 3\hat{j} + 6\hat{k}$. Write down the equation of this line in parametric and symmetric form.

Answer ([Please click here to Add Answer](#))

VuAnswers.com



Made by: Waqar Siddhu

Question No : 46 of 52

Marks: 3 (Budgeted Time 6 Min)

Find $\text{div } \vec{F}$, if $\vec{F} = (3x + y)\hat{i} + xy^2z\hat{j} + (xz^2)\hat{k}$

Answer (Please [click here](#) to Add Answer)

VuAnswers.com



Made by: Waqar Siddhu

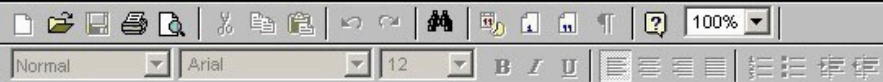
Question No : 45 of 52

Marks: 3 (Budgeted Time 6 Min)

What is the arc-length of the curve $\vec{r}(t) = (4+3t)\hat{i} + (2-2t)\hat{j} + (5+t)\hat{k}$ when $3 \leq t \leq 4$?

Answer (Please [click here](#) to Add Answer)

VuAnswers.com



Made by: Waqar Siddhu

Question No : 43 of 52

Marks: 2 (Budgeted Time 4 Min)

Prove whether the following function is even, odd or neither.

$$f(x) = x^2 - 4 \sin x$$

Answer ([Please click here to Add Answer](#))

VuAnswers.com



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Made by: Waqar Siddhu

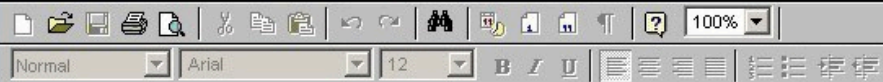
Question No : 44 of 52

Marks: 2 (Budgeted Time 4 Min)

Given $\vec{a} \times \vec{b} = 3xi + 2yj + zk$ and $\vec{c} = 7xi + 4yj$. Find scalar triple product of these vectors.

Answer ([Please click here to Add Answer](#))

VuAnswers.com



Made by: Waqar Siddhu

Question No : 42 of 52

Marks: 2 (Budgeted Time 4 Min)

Evaluate

$$\int_{-x}^x \cos nx \, dx$$

where n is an integer other than zero.

Answer ([Please click here to Add Answer](#))

VuAnswers.com



Made by: Waqar Siddhu

Question No : 41 of 52

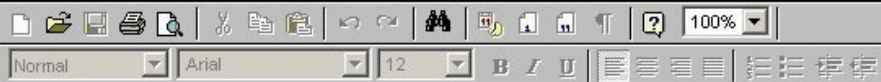
Marks: 2 (Budgeted Time 4 Min)

Determine whether the following differential is exact or not.

$$dz = 4x^3y^3 dx + 3x^4y^2 dy$$

Answer ([Please click here to Add Answer](#))

VuAnswers.com



Made by: Waqar Siddhu

Question No : 4 of 52

Marks: 1 (Budgeted Time 1 Min)

The following differential is exact

$$dz = (6xy + 2y^2 - 5) dx + (3x^2 + 4xy - 6) dy$$

Answer (Please select your correct option)

VuAnswers.com

True

correct

False

Made by: Waqar Siddhu

Question No : 40 of 52

Marks: 1 (Budgeted Time 1 Min)

Given the integral $\iint_R f(x,y) dx dy$, after converting to polar coordinates, it will become where $a \leq \theta \leq b$ and $c \leq r \leq d$.

Answer (Please select your correct option)

VuAnswers.com

$\int_a^b \int_c^d f(r, \theta) r dr d\theta$

$\int_a^b \int_c^d f(r, \theta) dr d\theta$

$\int_a^b \int_c^d f(r, \theta) r d\theta dr$

$\int_a^b \int_c^d f(r, \theta) d\theta dr$

Made by: Waqar Siddhu

Question No : 39 of 52

Marks: 1 (Budgeted Time 1 Min)

The point $p(0, \theta)$ in polar coordinate system lies on

Answer (Please select your correct option)

VuAnswers.com

Polar axis

y-axis

Pole

None of these

Made by: Waqar Siddhu

Question No : 38 of 52

Marks: 1 (Budgeted Time 1 Min)

If $p(r, \theta)$ is a point in polar coordinate system, then r is the distance of p from

Answer (Please select your correct option)

VuAnswers.com

Pole



Imaginary axis



None of these



Polar axis



Made by: Waqar Siddhu

Question No : 37 of 52

Marks: 1 (Budgeted Time 1 Min)

The graph of curve $r^2 = 4 \cos 2 \theta$ is symmetric about

Answer (Please select your correct option)

VuAnswers.com

Initial line

correct

y-axis

both initial line and y-axis

none of these

Made by: Waqar Siddhu

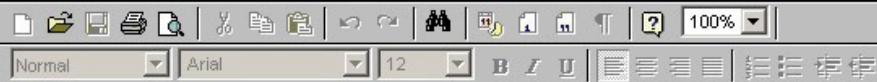
Question No : 52 of 52

Marks: 5 (Budgeted Time 10 Min)

Let $\vec{r}(t) = t^2 \hat{i} + t \hat{j} + (t^2 - 5) \hat{k}$. Find t , such that $\vec{r}(t)$ and $\vec{r}'(t)$ are perpendicular to each other.

Answer (Please [click here](#) to Add Answer)

VuAnswers.com



Made by: Waqar Siddhu

Question No : 50 of 52

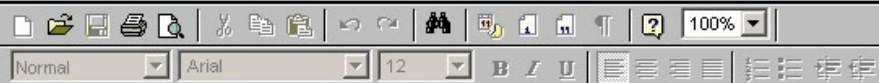
Marks: 5 (Budgeted Time 10 Min)

Determine whether the following vector field \vec{F} is conservative or not.

$$\vec{F}(x, y, z) = (3x + y)\hat{i} + xy^2z\hat{j} + xz^2\hat{k}$$

Answer (Please [click here](#) to Add Answer)

VuAnswers.com



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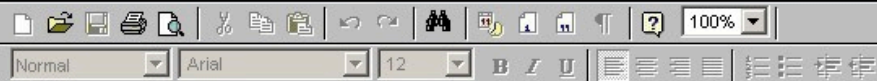
Question No : 51 of 52

Marks: 5 (Budgeted Time 10 Min)

Using second partial derivative test show that the function $f(x, y) = xy(24 - x - y)$ is maximum at $x = 8, y = 8$.

Answer ([Please click here to Add Answer](#))

VuAnswers.com



Made by: Waqar Siddhu

Question No : 49 of 52

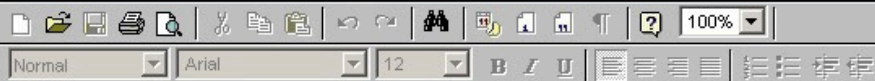
Marks: 5 (Budgeted Time 10 Min)

Determine the Fourier co-efficient b_n of the periodic function defined below:

$$f(x) = 2x + 1 \quad 0 < x < 2$$

Answer ([Please click here to Add Answer](#))

VuAnswers.com



Made by: Waqar Siddhu

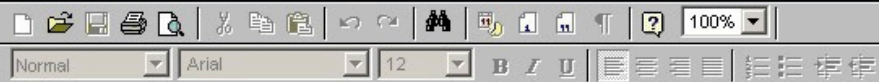
Question No : 48 of 52

Marks: 3 (Budgeted Time 6 Min)

What is the arc-length of the curve $\vec{r}(t) = (4 + 3t)\hat{i} + (2 - 2t)\hat{j}$ when $3 \leq t \leq 4$?

Answer (Please [click here](#) to Add Answer)

VuAnswers.com



Made by: Waqar Siddhu

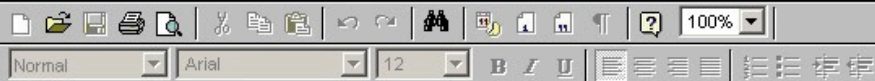
Question No : 47 of 52

Marks: 3 (Budgeted Time 6 Min)

Find the region where the function $f(x, y) = \sqrt{9 - x^2 - y^2}$ is continuous.

Answer ([Please click here to Add Answer](#))

VuAnswers.com



Made by: Waqar Siddhu

Question No : 46 of 52

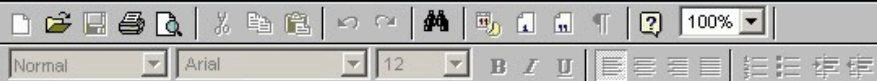
Marks: 3 (Budgeted Time 6 Min)

Prove whether the following function is even, odd or neither.

$$f(x) = \sin^2 x \cos 3x$$

Answer ([Please click here to Add Answer](#))

VuAnswers.com



Made by: Waqar Siddhu

Question No : 45 of 52

Marks: 3 (Budgeted Time 6 Min)

Use Wallis cosine formula to evaluate $\int_0^{\frac{\pi}{2}} (\cos^3 x + \cos^4 x) dx$

Answer (Please [click here](#) to Add Answer)

VuAnswers.com



Made by: Waqar Siddhu

Question No : 44 of 52

Marks: 2 (Budgeted Time 4 Min)

Write down the expression for the arc-length of the curve represented by the vector valued function $\vec{r}(t) = \cos t^2 \hat{i} + \sin t^2 \hat{j}$ where $0 \leq t \leq \frac{\pi}{2}$. (Do not evaluate the expression).

Answer (Please [click here](#) to Add Answer)

VuAnswers.com



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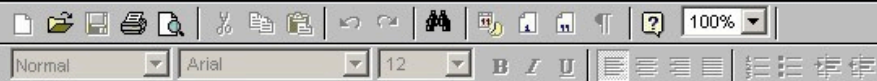
Question No : 43 of 52

Marks: 2 (Budgeted Time 4 Min)

Consider the point $\left(\frac{\sqrt{3}}{2}, \sqrt{3}, \frac{1}{2}\right)$ in rectangular coordinate system. Find the value of " ρ " in spherical coordinates.

Answer ([Please click here to Add Answer](#))

VuAnswers.com



Made by: Waqar Siddhu

Question No : 42 of 52

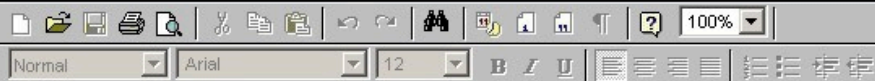
Marks: 2 (Budgeted Time 4 Min)

Prove whether the following function is even, odd or neither.

$$f(x) = x^3 + x^2$$

Answer ([Please click here to Add Answer](#))

VuAnswers.com



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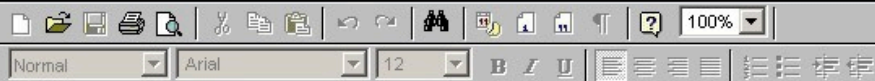
Question No : 41 of 52

Marks: 2 (Budgeted Time 4 Min)

Use Wallis sine formula to evaluate $\int_0^{\frac{\pi}{2}} \sin^5 x \, dx$

Answer (Please [click here](#) to Add Answer)

VuAnswers.com



Made by: Waqar Siddhu

Question No : 40 of 52

Marks: 1 (Budgeted Time 1 Min)

A function is said to be smooth if it's derivative is on any value of its domain.

Answer (Please select your correct option)

VuAnswers.com

continuous and non zero

piecewise continuous

defined and non zero

differentiable

correct

Made by: Waqar Siddhu

Question No : 38 of 52

Marks: 1 (Budgeted Time 1 Min)

For any two vector valued functions $\vec{r}_1(t)$ and $\vec{r}_2(t)$, $\frac{d}{dt}[\vec{r}_1(t) \cdot \vec{r}_2(t)] = \dots\dots\dots$ where " \times " and " \cdot " represent the cross and dot product respectively.

Answer (Please select your correct option)

VuAnswers.com

- $\vec{r}_1 \cdot \frac{d\vec{r}_2}{dt} - \frac{d\vec{r}_1}{dt} \cdot \vec{r}_2$
- $\vec{r}_1 \cdot \frac{d\vec{r}_2}{dt} + \frac{d\vec{r}_1}{dt} \cdot \vec{r}_2$
- $\vec{r}_1 \times \frac{d\vec{r}_2}{dt} + \frac{d\vec{r}_1}{dt} \times \vec{r}_2$
- $\vec{r}_1 \cdot \frac{d\vec{r}_2}{dt} - \frac{d\vec{r}_1}{dt} \times \vec{r}_2$

correct

Made by: Waqar Siddhu

Question No : 39 of 52

Marks: 1 (Budgeted Time 1 Min)

A single curve can be represented by vector valued function(s).

Answer (Please select your correct option)

VuAnswers.com

Two

Infinitely many

Single

correct

Three

Made by: Waqar Siddhu

Question No : 36 of 52

Marks: 1 (Budgeted Time 1 Min)

A vector valued function $\vec{r}(t) = x(t)\hat{i} + y(t)\hat{j} + z(t)\hat{k}$ is continuous if

Answer (Please select your correct option)

VuAnswers.com

- Atleast one of its components is continuous.
- All of its components are necessarily differentiable.
- All of its components are continuous.
- Limit exists for all of its components.

correct

Made by: Waqar Siddhu

Question No : 37 of 52

Marks: 1 (Budgeted Time 1 Min)

Given a vector valued function $\vec{r}(t) = \frac{1}{(t-3)}\hat{i} + e^t\hat{j}$ and its anti-derivative $\vec{R}(t) = \ln(t-3)\hat{i} + e^t\hat{j}$, then $\int \vec{r}(t) dt = \dots\dots\dots$

Answer (Please select your correct option)

VuAnswers.com

$\ln(t-3)\hat{i} + e^t\hat{j} + c$

$(t-3)\hat{i} + \frac{e^t}{2}\hat{j} + c$

$(t-3)^{-1}\hat{i} + \frac{e^t}{2}\hat{j} + c$

$\frac{1}{(t-3)}\hat{i} + e^t\hat{j}$

CORRECT Made by: Waqar Siddhu

Question No : 35 of 52

Marks: 1 (Budgeted Time 1 Min)

For the given vector valued functions $\vec{r}_1(t)$ and $\vec{r}_2(t)$, $\frac{d}{dt}[\vec{r}_1(t) \times \vec{r}_2(t)] = \dots\dots\dots$ where " \times " and " \cdot " represent the cross and dot product respectively.

Answer (Please select your correct option)

VuAnswers.com

$\vec{r}_1 \cdot \frac{d\vec{r}_2}{dt} + \frac{d\vec{r}_1}{dt} \cdot \vec{r}_2$

$\vec{r}_1 \times \frac{d\vec{r}_2}{dt} + \frac{d\vec{r}_1}{dt} \times \vec{r}_2$

$\frac{d\vec{r}_2}{dt} \times \vec{r}_1 + \vec{r}_2 \times \frac{d\vec{r}_1}{dt}$

$\frac{d\vec{r}_2}{dt} \times \vec{r}_1 + \frac{d\vec{r}_1}{dt} \times \vec{r}_2$

Made by: Waqar Siddhu

Question No : 34 of 52

Marks: 1 (Budgeted Time 1 Min)

If $\overset{\frown}{R}(t)$ is the anti-derivative of a given vector valued function $\overset{\frown}{r}(t)$ i.e., $\overset{\frown}{R}'(t) = \overset{\frown}{r}(t)$ then $\int_a^b \overset{\frown}{r}(t) dt = \dots\dots\dots$

Answer (Please select your correct option)

VuAnswers.com

$\overset{\frown}{R}(a) + \overset{\frown}{R}(b)$

$\overset{\frown}{R}(b) - \overset{\frown}{R}(a) + c$ where c is a non-zero constant.

$\overset{\frown}{R}(a) \cdot \overset{\frown}{R}(b)$

$\overset{\frown}{R}(b) - \overset{\frown}{R}(a)$

Made by: Waqar Siddhu

Question No : 33 of 52

Marks: 1 (Budgeted Time 1 Min)

The parametric equations that correspond to the vector equation $\vec{r}(t) = \sin^2 t \hat{i} + (1 - \cos 2t) \hat{j}$ are

Answer (Please select your correct option)

VuAnswers.com

$x = \sin^2 t$, $y = 1 - \cos 2t$, $z = 0$

correct

$y = \sin^2 t$, $x = 1 - \cos 2t$, $z = 0$

$x = \sin^2 t$, $y = 1 - \cos 2t$, $z = 1$

$x = \sin^2 t$, $y = \cos 2t$, $z = 1$

Made by: Waqar Siddhu

Given the integral $\iint_R f(x,y) dx dy$, after converting to polar coordinates, it will become where $a \leq \theta \leq b$ and $c \leq r \leq d$.

Answer (Please select your correct option)

VuAnswers.com

$\int_a^b \int_c^d f(r, \theta) r dr d\theta$

$\int_a^b \int_c^d f(r, \theta) dr d\theta$

correct

$\int_a^b \int_c^d f(r, \theta) r d\theta dr$

$\int_a^b \int_c^d f(r, \theta) d\theta dr$

Made by: Waqar Siddhu

Question No : 31 of 52

Marks: 1 (Budgeted Time 1 Min)

The point $p(0, \theta)$ in polar coordinate system lies on

Answer (Please select your correct option)

VuAnswers.com

Polar axis



y-axis



Pole



correct

None of these



Made by: Waqar Siddhu

Question No : 30 of 52

Marks: 1 (Budgeted Time 1 Min)

In polar coordinate system, x- axis is also called

Answer (Please select your correct option)

VuAnswers.com

Polar axis

correct

Pole

Imaginary axis

None of these

Made by: Waqar Siddhu

Question No : 29 of 52

Marks: 1 (Budgeted Time 1 Min)

If the equation of a curve, in polar co-ordinates, remains unchanged after replacing (r, θ) by $(r, \pi - \theta)$ then the curve is said to be symmetric about

Answer (Please select your correct option)

VuAnswers.com

y-axis

correct

Pole

Initial line

origin

Made by: Waqar Siddhu

Question No : 28 of 52

Marks: 1 (Budgeted Time 1 Min)

Polar co-ordinates of a point are $\left(-2, \frac{-3\pi}{2}\right)$. Which of the following is another possible polar co-ordinates representation of this point?

Answer (Please select your correct option)

VuAnswers.com

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

correct

$\left(-2, \frac{\pi}{4}\right)$

$\left(-2, \frac{3\pi}{4}\right)$

$\left(-2, \frac{\pi}{3}\right)$

Made by: Waqar Siddhu

Question No : 27 of 52

Marks: 1 (Budgeted Time 1 Min)

Polar co-ordinates of a point are $\left(7, \frac{-\pi}{4}\right)$. Which of the following is another possible polar co-ordinates representation of this point?

Answer (Please select your correct option)

VuAnswers.com

$\left(7, \frac{3\pi}{4}\right)$

correct

$\left(-7, \frac{3\pi}{4}\right)$

$\left(-7, \frac{-\pi}{4}\right)$

$\left(7, \frac{-3\pi}{4}\right)$

Made by: Waqar Siddhu

Question No : 26 of 52

Marks: 1 (Budgeted Time 1 Min)

If $R = \{(x, y) : 0 \leq x \leq 2 \text{ and } 1 \leq y \leq 4\}$, then $\iint_R (6x^2 + 4xy^3) dA = \dots\dots\dots$

Answer (Please select your correct option)

VuAnswers.com

$\int_1^4 \int_0^2 (6x^2 + 4xy^3) dy dx$

$\int_0^2 \int_1^4 (6x^2 + 4xy^3) dx dy$

$\int_1^4 \int_0^2 (6x^2 + 4xy^3) dx dy$

correct

$\int_0^2 \int_1^4 (6x^2 + 4xy^3) dx dy$

Made by: Waqar Siddhu

Question No : 25 of 52

Marks: 1 (Budgeted Time 1 Min)

The volume of parallelepiped with dimensions x, y, z is

Answer (Please select your correct option)

VuAnswers.com

$V = x^2 y^2 z^2$

$V = x + y + z$

$V = \sqrt{xyz}$

$V = xyz$

correct

Made by: Waqar Siddhu

Question No : 24 of 52

Marks: 1 (Budgeted Time 1 Min)

At the critical point (x_0, y_0) , if $D = f_{xx}(x_0, y_0)f_{yy}(x_0, y_0) - f_{xy}^2(x_0, y_0) < 0$ then f has a

Answer (Please select your correct option)

VuAnswers.com

Relative maximum at (x_0, y_0)

Relative minimum at (x_0, y_0)

correct

Saddle point at (x_0, y_0)

No conclusion can be drawn

Made by: Waqar Siddhu

Question No : 23 of 52

Marks: 1 (Budgeted Time 1 Min)

Gradient of a scalar function always results in a _____ function.

Answer (Please select your correct option)

VuAnswers.com

Scalar

Continuous

Vector

Constant

correct

Made by: Waqar Siddhu

Question No : 21 of 52

Marks: 1 (Budgeted Time 1 Min)

$$\lim_{(x,y) \rightarrow (0,1)} \frac{xy^2}{x^2 + y^2} =$$

Answer (Please select your correct option)

VuAnswers.com

- ∞
- 0
- 1
- 0.5

correct

Made by: Waqar Siddhu

Question No : 22 of 52

Marks: 1 (Budgeted Time 1 Min)

The function $z = \frac{1}{\sqrt{x+y}}$ is discontinuous at origin because at the point (0,0), it

Answer (Please select your correct option)

VuAnswers.com

- has a jump
- has a hole
- approaches towards infinity
- approaches towards zero

correct

Made by: Waqar Siddhu

Question No : 20 of 52

Marks: 1 (Budgeted Time 1 Min)

Intersection of two non parallel planes is a

Answer (Please select your correct option)

VuAnswers.com

Plane

Point

Straight line

None of these.

correct

Made by: Waqar Siddhu

Question No : 19 of 52

Marks: 1 (Budgeted Time 1 Min)

If α, β and γ are the direction angles of a line then
 $\cos^2 \alpha + \cos^2 \beta + \cos^2 \gamma =$

Answer (Please select your correct option)

VuAnswers.com

0

1

correct

2

T

Made by: Waqar Siddhu

Question No : 17 of 52

Marks: 1 (Budgeted Time 1 Min)

All axes are positive in ----- octant.

Answer (Please select your correct option)

VuAnswers.com

First

correct

Second

Fourth

Eighth

Made by: Waqar Siddhu

Question No : 18 of 52

Marks: 1 (Budgeted Time 1 Min)

The angles which a line makes with positive x , y and z-axes are known as -----

Answer (Please select your correct option)

VuAnswers.com

Direction cosines

Direction ratios

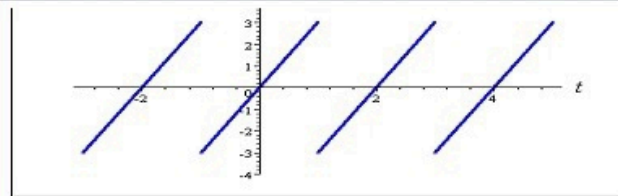
Direction angles

correct

Made by: Waqar Siddhu

Question No : 16 of 52

Marks: 1 (Budgeted Time 1 Min)



Answer (Please select your correct option)

VuAnswers.com

An odd function

An even function

Neither even nor odd

Made by: Waqar Siddhu

Question No : 16 of 52

Marks: 1 (Budgeted Time 1 Min)



The graph of "saw tooth wave" given above is -----

Answer (Please select your correct option)

VuAnswers.com

An odd function

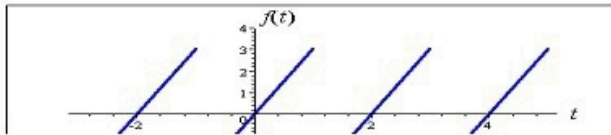
An even function

Neither even nor odd

Made by: Waqar Siddhu

Question No : 16 of 52

Marks: 1 (Budgeted Time 1 Min)



Answer (Please select your correct option)

VuAnswers.com

An odd function

An even function

Neither even nor odd

Made by: Waqar Siddhu

Question No : 14 of 52

Marks: 1 (Budgeted Time 1 Min)

What is $L(-6)$ if L denotes Laplace Transform?

Answer (Please select your correct option)

VuAnswers.com

$L(-6) = \frac{1}{s+6}$

$L(-6) = \frac{-6}{s}$

correct

$L(-6) = \frac{s}{s^2+36}$

$L(-6) = \frac{-6}{s^2+36}$

Made by: Waqar Siddhu

Question No : 13 of 52

Marks: 1 (Budgeted Time 1 Min)

If L denotes laplace transform then

$$L\{te^{5t}\} =$$

Answer (Please select your correct option)

VuAnswers.com

$L\{te^{5t}\} = \frac{1}{s^2 - 5}$

$L\{te^{5t}\} = \frac{1}{s^2 + 5}$

$L\{te^{5t}\} = \frac{1}{(s + 5)^2}$

$L\{te^{5t}\} = \frac{1}{(s - 5)^2}$

correct

Made by: Waqar Siddhu

Question No : 11 of 52

Marks: 1 (Budgeted Time 1 Min)

Which of the following is Laplace inverse transform of the function $f(s)$ defined by $f(s) = \frac{3}{s-2} - \frac{2}{s}$?

Answer (Please select your correct option)

VuAnswers.com

$3te^{2t} - 2$

$3e^{2t} - 2t$

$3e^{2t} - 2$

correct

None of these.

Made by: Waqar Siddhu

Question No : 12 of 52

Marks: 1 (Budgeted Time 1 Min)

What is laplace transform of the function $F(t)$ if $F(t) = \sin 3t$?

Answer (Please select your correct option)

VuAnswers.com

$L(\sin 3t) = \frac{3}{s^2 + 9}$

correct

$L(\sin 3t) = \frac{s}{s^2 + 9}$

$L(\sin 3t) = \frac{1}{s - 3}$

$L(\sin 3t) = \frac{3!}{s^4}$

Made by: Waqar Siddhu

Question No : 10 of 52

Marks: 1 (Budgeted Time 1 Min)

The graph of an even function is symmetrical about -----

Answer (Please select your correct option)

VuAnswers.com

x-axis

y-axis

correct

origin

Made by: Waqar Siddhu

Question No : 9 of 52

Marks: 1 (Budgeted Time 1 Min)

The function $f(x) = x^2 \cos 2x$ is -----

Answer (Please select your correct option)

VuAnswers.com

Neither even nor odd

Odd function

Even function

correct

Made by: Waqar Siddhu

Question No : 8 of 52

Marks: 1 (Budgeted Time 1 Min)

Let L denotes the Laplace Transform.
According to First Shift Theorem, if $L\{F(t)\} = f(s)$ then which of the following equation holds?
 s and a are constants.

Answer (Please select your correct option)

VuAnswers.com

$L\{e^{-at}F(t)\} = f(s+a)$

$L\{e^{-at}F(t)\} = f(s)$

$L\{e^{-at}F(t)\} = f(a)$

$L\{e^{-at}F(t)\} = f(s-a)$

Made by: Waqar Siddhu

Question No : 7 of 52

Marks: 1 (Budgeted Time 1 Min)

What is the period of periodic function whose graph is as below?



Answer (Please select your correct option)

VuAnswers.com

- π
- $-\pi$
- 2π
- -2π

correct

Made by: Waqar Siddhu

Question No : 6 of 52

Marks: 1 (Budgeted Time 1 Min)

Which of the following condition must be satisfied for a vector field \vec{F} to be a conservative vector field?

Answer (Please select your correct option)

VuAnswers.com

- Line integral of \vec{F} along a curve, depends only on the endpoints of that curve, not on the particular route taken.
- Divergence of \vec{F} should be zero
- Gradient of \vec{F} should be zero.
- $\vec{F} = 0$

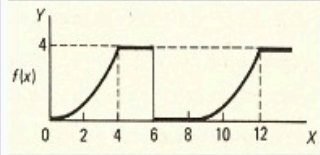
correct

Made by: Waqar Siddhu

Question No : 5 of 52

Marks: 1 (Budgeted Time 1 Min)

What is the period of periodic function whose graph is as below?



Answer (Please select your correct option)

VuAnswers.com

- 0
- 4
- 6
- 8

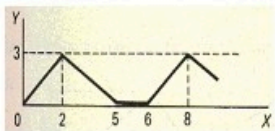
correct

Made by: Waqar Siddhu

Question No : 4 of 52

Marks: 1 (Budgeted Time 1 Min)

What is the period of periodic function whose graph is as below?



Answer (Please select your correct option)

VuAnswers.com

2

5

6

correct

8

Made by: Waqar Siddhu

Question No : 3 of 52

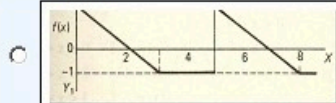
Marks: 1 (Budgeted Time 1 Min)

Match the following periodic function with its graph.

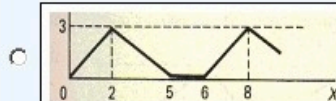
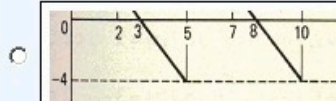
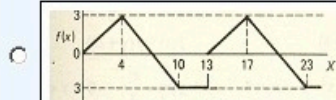
$$f(x) = \begin{cases} 2-x & 0 < x < 3 \\ -1 & 3 < x < 5 \end{cases}$$

Answer (Please select your correct option)

VuAnswers.com



correct



Made by: Waqar Siddhu

Question No : 2 of 52

Marks: 1 (Budgeted Time 1 Min)

What is the period of a periodic function defined by $f(x) = 4 \cos 3x$?

Answer (Please select your correct option)

VuAnswers.com

$\frac{\pi}{4}$

$\frac{\pi}{3}$

$\frac{2\pi}{3}$

correct

π

Made by: Waqar Siddhu

Question No : 15 of 52

Marks: 1 (Budgeted Time 1 Min)

A vector field is a vector each of whose components is a scalar field

Answer (Please select your correct option)

VuAnswers.com

True

correct

False

Made by: Waqar Siddhu

Question No : 47 of 52

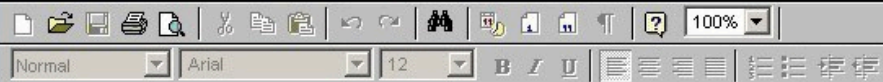
Marks: 3 (Budgeted Time 6 Min)

Determine the Fourier co-efficient a_0 of the periodic function defined below:

$$f(x) = 2x + 1 \quad 0 < x < 2$$

Answer ([Please click here to Add Answer](#))

VuAnswers.com



Made by: Waqar Siddhu

Question No : 47 of 52

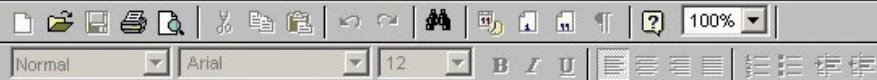
Marks: 3 (Budgeted Time 6 Min)

Determine the Fourier co-efficient a_0 of the periodic function defined below:

$$f(x) = 2x + 1 \quad 0 < x < 2$$

Answer (Please [click here](#) to Add Answer)

VuAnswers.com

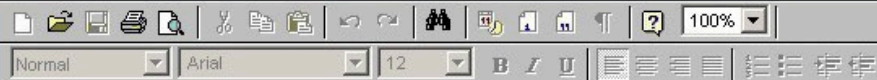


Made by: Waqar Siddhu

Consider the point $(-5, 5, 6)$ in rectangular coordinate system. Convert it into Spherical coordinates.

Answer (Please [click here](#) to Add Answer)

VuAnswers.com



Made by: Waqar Siddhu

Question No : 20 of 52

Marks: 1 (Budgeted Time 1 Min)

In three dimensional space, the equation $y = x^2$ always represents

Answer (Please select your correct option)

VuAnswers.com

Parabola

correct

Straight line

Half cylinder

Cone

Made by: Waqar Siddhu

Question No : 1 of 52

Marks: 1 (Budgeted Time 1 Min)

Which one of the following is correct Wallis Sine formula when n is odd and $n \geq 3$?

Answer (Please select your correct option)

VuAnswers.com

$\int_0^{\frac{\pi}{2}} \sin^n x \, dx = \frac{\pi}{2} \frac{(n-1)}{n} \frac{(n-3)}{(n-2)} \frac{(n-5)}{(n-4)} \dots \frac{5}{6} \frac{3}{4} \frac{1}{2}$

$\int_0^{\frac{\pi}{2}} \sin^n x \, dx = \frac{\pi}{2} \frac{(n)}{(n-1)} \frac{(n-2)}{(n-3)} \frac{(n-4)}{(n-5)} \dots \frac{6}{5} \frac{4}{3} \frac{2}{1}$

$\int_0^{\frac{\pi}{2}} \sin^n x \, dx = \frac{(n-1)}{n} \frac{(n-3)}{(n-2)} \frac{(n-5)}{(n-4)} \dots \frac{6}{7} \frac{4}{5} \frac{2}{3}$

correct

$\int_0^{\frac{\pi}{2}} \sin^n x \, dx = \frac{(n)}{(n-1)} \frac{(n-2)}{(n-3)} \frac{(n-4)}{(n-5)} \dots \frac{6}{5} \frac{4}{3} \frac{2}{1}$

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