MTH301

Final term file

2024

Solved by


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Which of the following condition must be satisfied for vector field $(\vec{f})$ to be conservative vector field $(\vec{f})=0$

Intersection of two straight line is plane

Curl of vector of function is always a vector

Plane is a ……. Surface. 2 dimensional

Given the integral $\iint_R F(X,Y)dxdy$ after converting into polar coordinate will be where $a \le \theta \le b \quad c \le r \le d$

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

Geometrical representation of real number is coordinate line

Straight line is special form of parabola

An ordered triple corresponds to……in 3 dimensional state 3points
Which of following is interval notation of real line
$(-\infty,\infty)$

The angle which a line makes with positive x,y,z axis known as directional angle

An ordered triple corresponds to ……in three dimensional space a unique points

What is laplace transform of the function F(t) if F(t) =t

L(t)=1/s

L is laplace transform of the function according to first shift theorem

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

What is value of $L\{e^{5t}\}$ if L is laplace transform $L\{e^{5t}\}=\frac{1}{s-5}$

What is value of L{-6} if L is laplace transform -6/S

What is laplace inverse transform of form $\frac{1}{s+1}$ $L^{-1}\frac{1}{s+1}=e^{-1}$

What is laplace inverse transform of form $\frac{5}{s^2+25}$ $L^{-1}\frac{5}{s^2+25}=sin5t$

What is laplace inverse transform of form f(x) of form $f(x)=\frac{3}{s-2}-\frac{2}{s}$

$3e^{2t}-2$

What is correct answer

$\int_0^{\frac{\pi}{2}}\sin^4 x dx=\frac{3\pi}{16}$

$PQ=\sqrt{(x_2-x_1)^2+(y_2-y_1)^2+(z_2-z_1)^2}$ Which is known

Distance formula

What is distance between the points (3,2,0) and (1,0,-1)

3

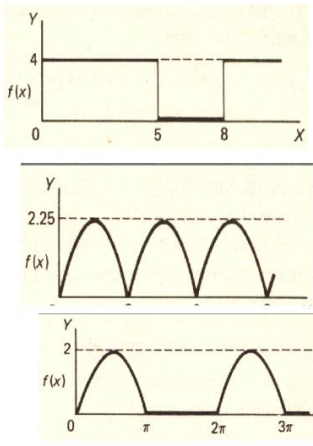
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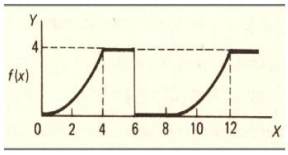
Which of the following is direction ratio for line joining points (1,3,5) (2,-1,4) (1,-4,-1)

In three dimension space the equation y=x^2 represent parabola

Sketch the graphs of the following inserting relevant values.

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

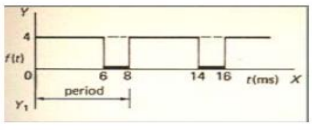


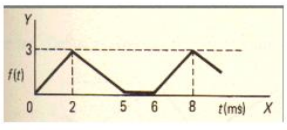


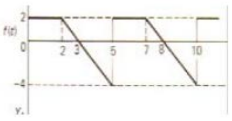
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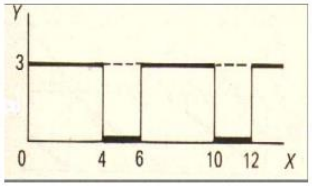
sketch graph of $f(x)=\begin{bmatrix} 3 & 0<x<4 \\ 0 & 4<x<6 \end{bmatrix}$

Example







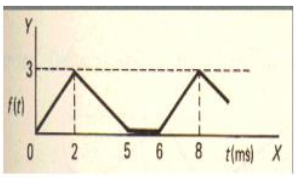


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Youtube math zone for vu

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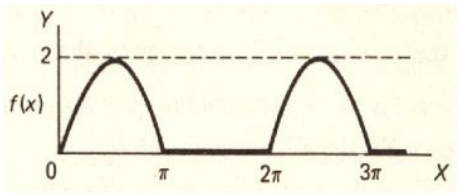
What is period of graph



period = 6 ms

6

What is period of graph



2π

Polar coordinates of points are $\left(-2,\frac{-3\pi}{2}\right)$ which is other coordinates of another Polar coordinates representation of this points.

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

The function $f(x)=x^3e^x$ is……neither even nor or

If the equation of a curve in Polar coordinates,remain unchanged after replacing (r,θ) by $(-r,\theta)$ than currrve is said to be symmetric about which of the following pole

Graph is even function along y axis

Graph is odd function along pole

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Function is said to be smooth if derivative is ……..on any value of domain

Continuous and non zero

Example $y = x^2 - 4x+3$

Vertex of parabola of above equation is

is V(2 , -1)

equation $x^2 - 4x + 2$ represent parabola find vertex

v(2,-2)

What is amplitute of a periodic function defined by f(x)=sinx/3 1

What is amplitute of a periodic function defined by f(x)=4sin2x 4

Find period of periodic function y=4cos3x 2pi/3

Find period of periodic function f(x)=sinpi/2v 4pi

The equation

$$\frac{\partial^2 f}{\partial x^2} + \frac{\partial^2 f}{\partial y^2} \quad \frac{\partial^2 f}{\partial z^2} = 0$$

Is known as…….laplace equation

Is the function f(x,y) continuous at origion?if not why? $f(x,y) = \frac{xy}{x^2 + y^2}$

$\lim_{(x,y)\to(0,0)} f(x,y)$ not exist

Sign of line integral is reversed when the direction of path of integration is reversed

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Wallis Sine Formula

When n is even $\int_0^{\frac{\pi}{2}} \sin^n x dx = \frac{n-1}{n}.\frac{n-3}{n-2}.\frac{n-5}{n-4}.\frac{n-7}{n-6}.\text{---------}.\frac{5}{6}.\frac{3}{4}.\frac{1}{2}.\frac{\pi}{2}$

When n is odd $\int_0^{\frac{\pi}{2}} \cos^n x dx = \frac{n-1}{n}.\frac{n-3}{n-2}.\frac{n-5}{n-4}.\frac{n-7}{n-6}.\text{---------}.\frac{6}{7}.\frac{4}{5}.\frac{2}{3}.$

What is parametric equations of given vector $(2t-1)\hat{i}-\sqrt{3t}\,\hat{j}+\sin 3t\,\hat{k}$

$x=(2t-1)\quad y=\sqrt{3t}\qquad z=\sin 3t$

What is parametric equations of given vector $(\sin^2 t)\hat{i}+(1-cos2t)3t\,\hat{j}$

$x=(\sin^2 t)\quad y=(1-cos2t)3t$ z=0

Graph of equation $r=3i-2j-k$ has points……..

(3,-2,-1)

given a vector valued function $r(t)=\frac{1}{t-3}i+e^t j$ and antiderivative is $r(t)=\ln(t-3)i+e^t j$ than integration will be

$\int r(t)= \quad \ln(t-3)i+e^t j$

A single curve can be represented by …….vector valued function

single

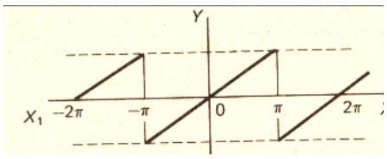
Find derivative of vector valued function $\vec{r}(t)=(\cos 5t, \tan t, 6\sin t)$

$-5\cos t, \sec^2 t, 6\cos t$

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Find derivative of vector valued function $\vec{r}(t)=\left(t^4,\sqrt{t+1},\frac{3}{t^2}\right)$

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



Odd

for $f(x,y,z)$ find $\frac{\partial w}{\partial r}$

$$\frac{\partial w}{\partial r}=\frac{\partial w}{\partial x}\frac{\partial x}{\partial r}+\frac{\partial w}{\partial y}\frac{\partial y}{\partial r}$$

To evaluate line integral the integrand is expressed iun term ofd x,y,z with

$$\vec{dr}=dx\hat{i}+dy\hat{j}+dz\hat{k}$$

It is exact differential $dz=\left(x^2y+y\right)dx-xdy$

False

What is laplace form of function f(t) is constant $\int_0^\infty f(t)e^{-st}dt$

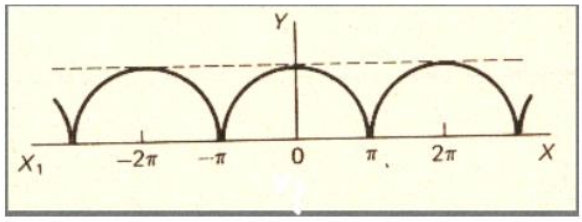
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Let function P(x,y) Q(x,y) are finite and continuous inside ans at the boundary of closed curve C in x-y plane if (Pdx+Qdy) Is Exact Differential than

$$\oint_c (Pdx + Qdy) =$$

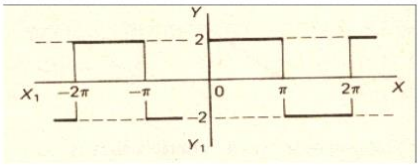
0

Function is even or odd



Even

Function is even or odd



odd.

At each point of doimian function

is define

π is ……number

Irrational number

Gradient of scalar function is always ……function vector

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