THIAGARAJAR COLLEGE OF ENGINEERING

22MA110-CALCULUS FOR ENGINEERS

MATLAB ASSIGNMENT 2

NAME:S.PRAVEEN

REG NO:917723IT110

CLASS:IT-B

1.AIM:

To evaluate definite and indefinite integrals using MATLAB

$$\int_{1}^{110} t^2+t^2*t^(1/2)+1/t^2 \, dt$$

MAIN COMMANDS:

int-used to find integration

disp-used to display

SOURCE CODE:

```
>> syms t
>> f=(t^2+t^2*t^(1/2)+1)/t^2;
>> int(f,t,1,110)
```

OUTPUT:

```
ans =

(220*110^(1/2))/3 + 36077/330
```

2.AIM:

To calculate the area and volume of the given surface using MATLAB.

The arc of the parabola y = (110) x2 from (0, 2) to (4, 8) is rotated about the y-axis. Find the area of the resulting surface

MAIN COMMANDS:

int-used to find the integrations

SOURCE CODE:

```
>> syms x

>> y=110*x^2;

>> Dy=diff(y,x);

>> S=2*pi*x*sqrt(1+Dy^2);

>> area=int(S,x,0,4)
```

OUTPUT:

```
area =

(pi*(774401*774401^(1/2) - 1))/72600
```

3.AIM:

To calculate the area and volume of the given surface using MATLAB

Find the volume of the solid obtained by rotating the region bounded by $2y$ = $(reg\ no)$ $x3$, y = 4 and x = 0 about the y-axis

MAIN COMMANDS:

int-used to find integrations

SOURCE CODE:

```
>> syms y
>> A=pi*2^(2/3)*y^(2/3)/(110)^(2/3);
>> volume=int(A,y,0,4)
```

OUTPUT:

```
volume =

(5614826224721548*2^(1/3))/5385016056797915
```

4.AIM:

To evaluate the double integral in Cartesian coordinates and area as double integrals, using MATLAB

Pi/4 x

Evaluate ∫ ∫ 2 (110) sin $y\ dy\ dx$.

0 0

MAIN COMMANDS:

syms – used to assign variables

int – to find the integration

SOURCE CODE:

```
>> syms x y
>> f=2*110*sin(y);
>> int(int(f,y,0,x),x,0,pi/4)
```

OUTPUT:

```
ans =
55*pi - 110*2^(1/2)
```

5.AIM:

To evaluate the triple integrals in Cartesian coordinates and volume as triple integrals, using MATLAB

Evaluate $\int_0^3 \int_0^{110} \int_0^1 (xy + z\,2)\, dx\, dy\, dz.$

MAIN COMMANDS:

syms – used to assign variables

int – to find the integration

SOURCE CODE:

```
>> syms x y z
>> f=(x*y+z^2);
>> int(int(int(f,x,0,1),y,0,110),z,0,3)
```

OUTPUT:

```
ans =

10065
```