MATLAB EXPERIMENT-5

20BCE1209

Q Draw the common region between the following curves and find the area.

1) $4x^2 + y = 4$ and $x^4 - y = 1$

CODE:-

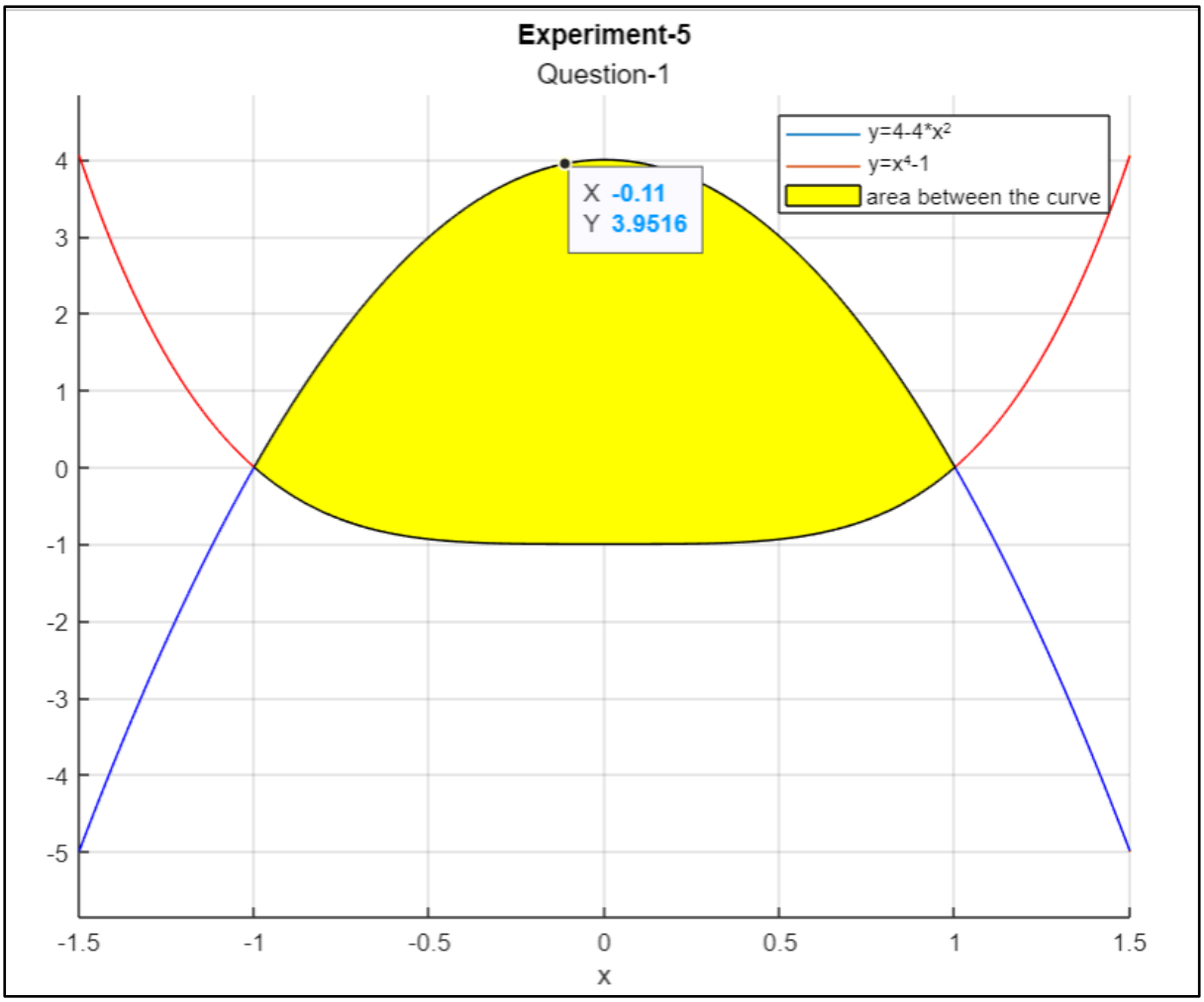
```
clear
clc
syms x
y1= 4-4*x^2;
y2= x^4-1;
ax=solve(y2-y1,x);
ax=double(ax);
D=[ax(1)-0.5 ax(2)+0.5];
Area=int(y1-y2,ax(1),ax(2));
sprintf("Area between curves is %.2f",Area)
hold on
z1=ezplot(y2,D);grid on;
set(z1,"color","r");
z2=ezplot(y1,D);
set(z2,"color","b");
xv=linspace(ax(1),ax(2));
y1v=subs(y1,x,xv);
y2v=subs(y2,x,xv);
x=[xv,fliplr(xv)];
y=[y1v,fliplr(y2v)];
fill(x,y,'y'),title Experiment-5 Question-1;
legend('y=4-4*x^2','y=x^4-1','area between the curve');
```

OUTPUT:-

COMMAND WINDOW

```
ans =

    "Area between curves is 6.93"
```

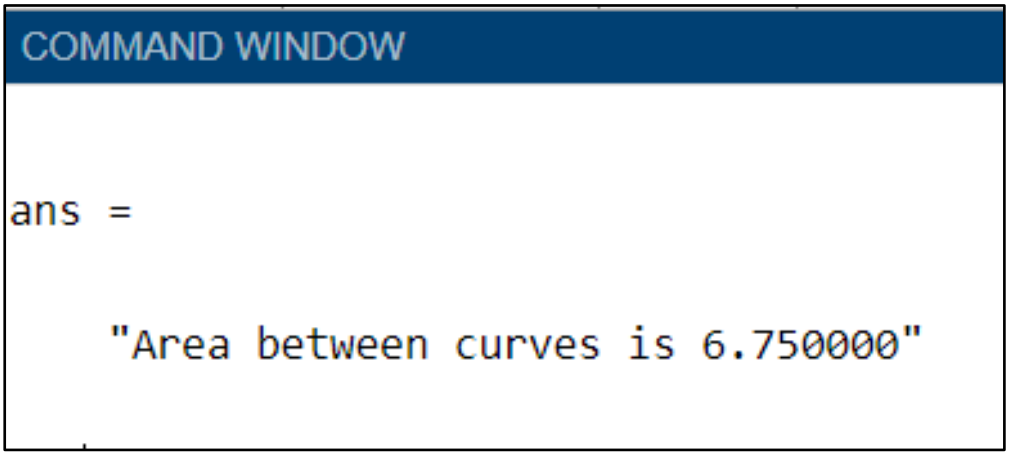

Experiment-5
Question-1
y=4-4*x²
y=x⁴-1
area between the curve
X -0.11
Y 3.9516
4
3
2
1
0
-1
-2
-3
-4
-5
-1.5
-1
-0.5
0
0.5
1
1.5
x

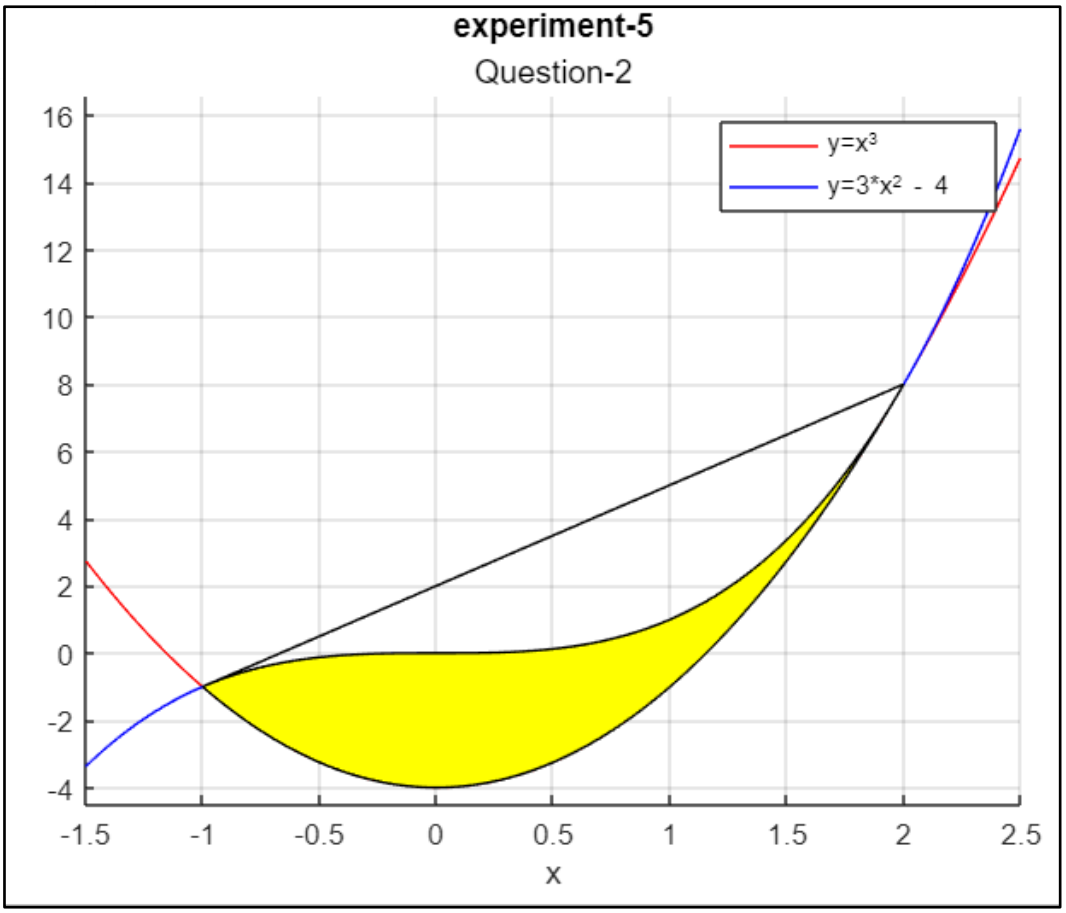
2) $x^3 - y = 0$ and $3x^2 - y = 4$

CODE:-

```
syms x
y1= x^3;
y2= 3*x^2-4;
ax=solve(y2-y1,x);
ax=double(ax);
D=[ax(1)-0.5 ax(2)+0.5];
Area=int(y1-y2,ax(1),ax(2));
sprintf("Area between curves is %f",Area)
hold on
z1=ezplot(y2,D);grid on;
set(z1,"color","r");
z2=ezplot(y1,D);
set(z2,"color","b");
xv=linspace(ax(1),ax(2));
y1v=subs(y1,x,xv);
y2v=subs(y2,x,xv);
X=[xv,xv];
Y=[y2v,y1v];
fill(X,Y,'y'),title experiment-5 Question-2;
f1=sprintf("y=%s",y1);f2=sprintf("y=%s",y2);
legend(f1,f2);
```

OUTPUT:-




experiment-5
Question-2
y=x³
y=3*x² - 4
16
14
12
10
8
6
4
2
0
-2
-4
-1.5
-1
-0.5
0
0.5
1
1.5
2
2.5
x