**EXPERIMENT NO: 04**

**MIDPOINT ELLIPSE DRAWING ALGORITHM**

**CODE:**

#include<stdio.h>

#include<conio.h>

#include<graphics.h>

#include<math.h>

void main()

{

clrscr();

int gd=DETECT,gm;

initgraph(&gd,&gm,"");

float a,b;

printf("\nEnter the major and minor axis length of ellipse ");

scanf("%f%f",&a,&b);

float x0=0;

float y0=b;

putpixel(x0+300,y0+200,WHITE);

float p1=(b\*b)-(a\*a\*b)+(0.25\*a\*a);

while(2\*b\*b\*x0<2\*a\*a\*y0)

{

if(p1<0.0)

{

x0=x0+1;

y0=y0;

p1=p1+2\*b\*b\*x0+b\*b;

}

else

{

x0=x0+1;

y0=y0-1;

p1=p1+2\*b\*b\*x0-2\*a\*a\*y0+b\*b;

}

putpixel(x0+300,y0+200,WHITE);

putpixel(x0+300,-y0+200,WHITE);

putpixel(-x0+300,-y0+200,WHITE);

putpixel(-x0+300,y0+200,WHITE);

}

float p2=b\*b\*pow(x0+0.5,2)+(a\*a\*pow(y0-1,2))-b\*b\*a\*a;

while(y0>0.0)

{

if(p2<0.0)

{

x0=x0+1;

y0=y0-1;

p2=p2+2\*b\*b\*x0-2\*a\*a\*y0+a\*a;

}

else

{

x0=x0;

y0=y0-1;

p2=p2-2.0\*a\*a\*y0+a\*a;

}

putpixel(x0+300,y0+200,WHITE);

putpixel(x0+300,-y0+200,WHITE);

putpixel(-x0+300,-y0+200,WHITE);

putpixel(-x0+300,y0+200,WHITE);

}

getch();

closegraph();

}  
**OUTPUT:**

