elipses2.m (1)

```
function elipse2(a,b)

nt=100;
t=[0:2*pi/nt:2*pi];
f=sqrt(a^2-b^ 2);
figure(1);
hold on;
plot(a*sin(t),b*cos(t));
plot(f,0,"*r")
plot(-f,0,"*g")
hold off;
figure(2);
i=input("");
```

elipses2.m (2)

```
for i=1:4:columns(t)
  figure(1);
  hold on;
  t0=t(i);
  plot(a*sin(t0),b*cos(t0),'+k');
  plot([f,a*sin(t0)],[0,b*cos(t0)],'r');
  plot([-f,a*sin(t0)],[0,b*cos(t0)],'g');
  hold off;
```

elipses2.m (3)

```
d1=sqrt((f-a*sin(t0))^2+(b*cos(t0))^2);
d2=sqrt((-f-a*sin(t0))^2+(b*cos(t0))^2);
d=d1+d2;
figure(2);
hold on;
plot(t0,d,'*b');
plot(t0,d1,'*r');
plot([t0,t0],[0,d1],'r');
plot([t0,t0],[d1,d],'g');
hold off;
sleep(0.1);
```

elipses2.m (4)

```
    figure(1)
    hold on;
    plot([f,a*sin(t0)],[0,b*cos(t0)],'w');
    plot([-f,a*sin(t0)],[0,b*cos(t0)],'w');
    hold off;
end
endfunction
```

elipses.m (1)

```
function elipses(a,b,x0,y0)
nt=1000;
t=[-pi:2*pi/nt:pi];
figure(1)
hold on
axis("square","off");
plot(a*sin(t)+x0,b*cos(t)+y0,'b');
sleep(0.5);
c=sqrt(a.^2-b.^2);
plot([-c+x0,c+x0],[0,0],'*b')
sleep(0.5);
plot([ex(a,x0,t(1))],[ey(b,y0,t(1))],'*k')
sleep(0.5);
```

elipses.m (2)

```
figure(2)
axis([-4,4,0,4.5]);
hold on
axis("square","on");
pause(10);
```

elipses.m (3)

```
figure(1)
plot([c+x0,ex(a,x0,t(i))],[y0,ey(b,y0,t(i))],'g')
plot([-c+x0,ex(a,x0,t(i))],[y0,ey(b,y0,t(i))],'r')

figure(2)
d1=sqrt((-c+x0-ex(a,x0,t(i)))^2+(y0-ey(b,y0,t(i)))^2);
d2=sqrt((c+x0-ex(a,x0,t(i)))^2+(y0-ey(b,y0,t(i)))^2);
plot(t(i),d1+d2,'*')
plot(t(i),d1,'*r')
plot(t(i),d2,'*g')
sd1=num2str(d1);
sd2=num2str(d2);
sd3=num2str(d1+d2);
title(strcat("d1 = ",sd1," d2 = ",sd2," d1+d2 = ",sd3))
```

elipses.m (4)

```
figure(1)
plot([c+x0,ex(a,x0,t(i))],[y0,ey(b,y0,t(i))],'w')
plot([-c+x0,ex(a,x0,t(i))],[y0,ey(b,y0,t(i))],'w')
plot([-c+x0,c+x0],[0,0],'*b')
```

ex

```
function r=ex(a,x,t)
r=a*sin(t)+x;
endfunction
```

ey

```
function r=ey(b,y,t)
r=b*cos(t)+y;
endfunction
```

elipses.m (4)

```
figure(1)
plot([c+x0,ex(a,x0,t(i))],[y0,ey(b,y0,t(i))],'w')
plot([-c+x0,ex(a,x0,t(i))],[y0,ey(b,y0,t(i))],'w')
plot([-c+x0,c+x0],[0,0],'*b')
```

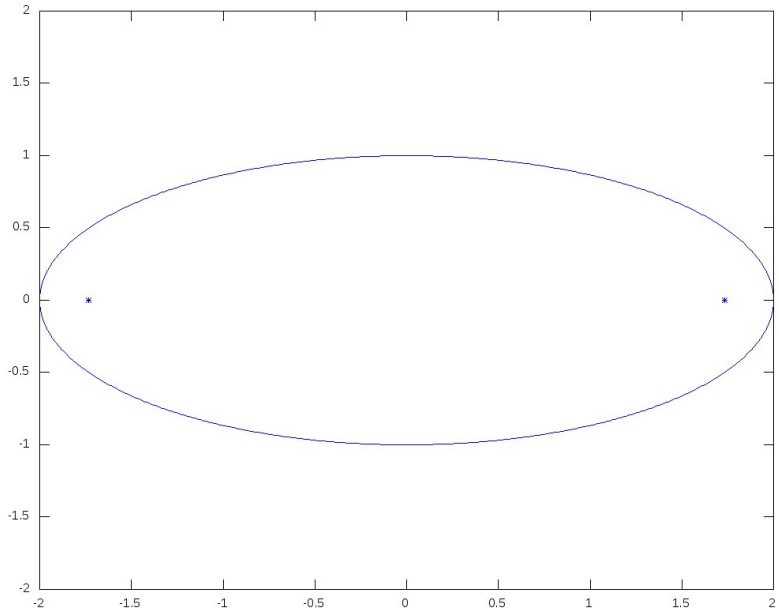
ex

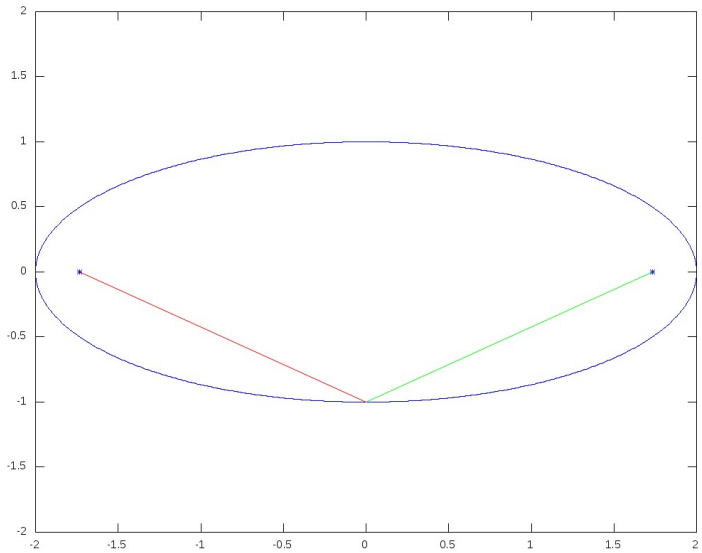
```
function r=ex(a,x,t)
r=a*sin(t)+x;
endfunction
```

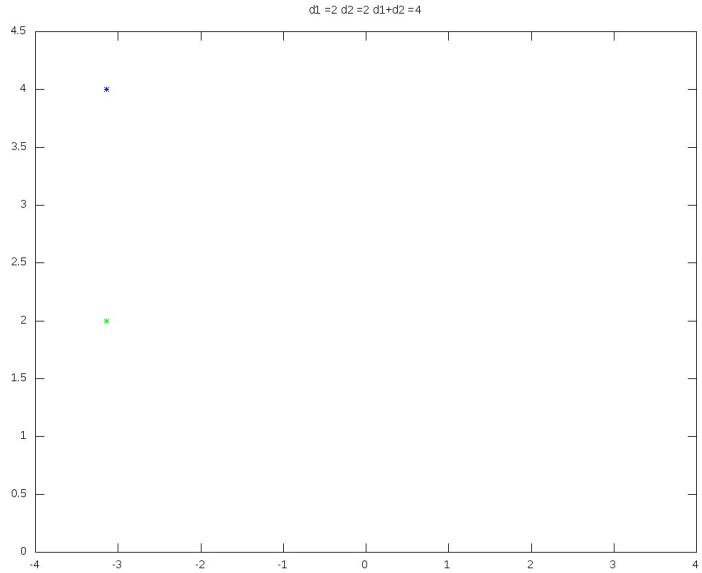
ey

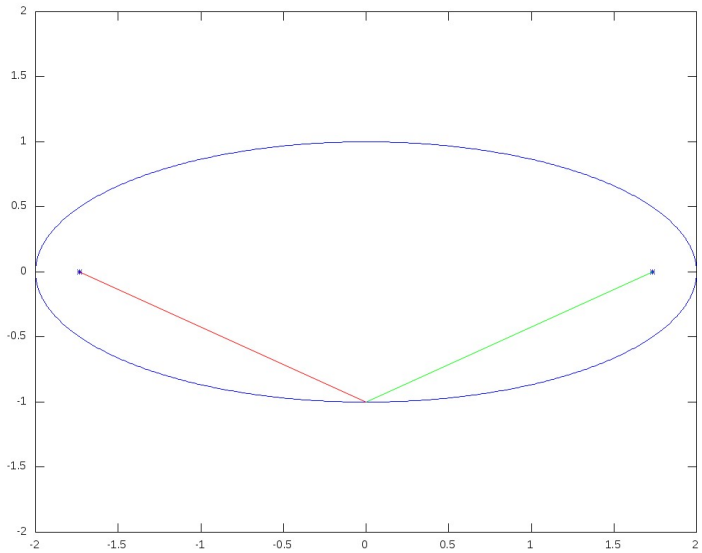
```
function r=ey(b,y,t)
r=b*cos(t)+y;
endfunction
```

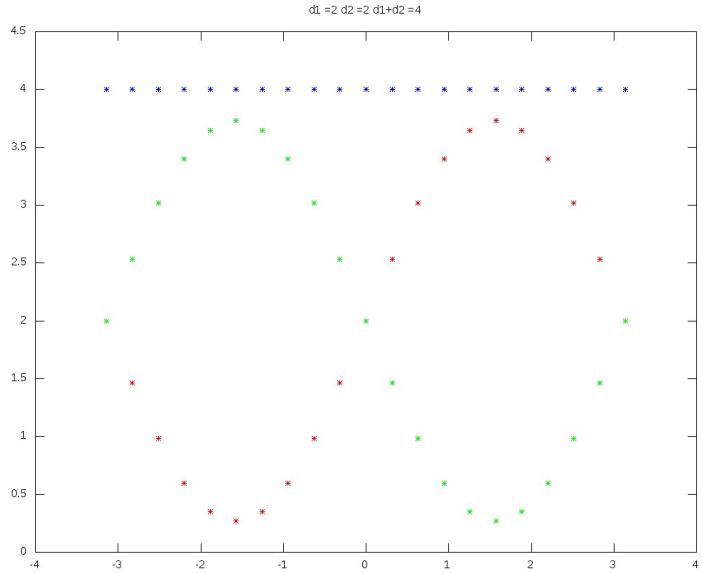
elipses(2,1,0,0)




2
1.5
1
0.5
0
-0.5
-1
-1.5
-2
-2
-1.5
-1
-0.5
0
0.5
1
1.5
2


d1 =2 d2 =2 d1+d2 =4
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
-4
-3
-2
-1
0
1
2
3
4


2
1.5
1
0.5
0
-0.5
-1
-1.5
-2
-2
-1.5
-1
-0.5
0
0.5
1
1.5
2


d1 =2 d2 =2 d1+d2 =4
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
-4
-3
-2
-1
0
1
2
3
4

elipses4.m (1)

```
function elipses4(a,b)
e=0.25;
fact=0.25;
nt=100;
t=[0:2*pi/nt:2*pi];
f=sqrt(a^2-b^ 2);
for i=1:columns(t)
  figure(1);
  newplot();
  hold on;
  plot(a*sin(t),b*cos(t));
  plot(f,0,"*r")
  plot(-f,0,"*g")
```

elipses4.m (2)

```
axis([-a,a,-b,b+5*e],"square");
text(-a,b+2*e,"                total");
text(-a,b+4*e,"          linea roja");
text(-a,b+3*e,"         linea verde");
t0=t(i);
plot(a*sin(t0),b*cos(t0),'*k');
plot([f,a*sin(t0)],[0,b*cos(t0)],'r');
plot([-f,a*sin(t0)],[0,b*cos(t0)],'g');
```

elipses4.m (3)

```
d1=sqrt((f-a*sin(t0))^2+(b*cos(t0))^2);
d2=sqrt((-f-a*sin(t0))^2+(b*cos(t0))^2);
d=d1+d2;
plot([0,fact*d1],[b+4*e,b+4*e],'r');
plot([0,fact*d2],[b+3*e,b+3*e],'g');
plot([0,fact*d1],[b+2*e,b+2*e],'r');
plot([fact*d1,fact*(d1+d2)],[b+2*e,b+2*e],'g');
text(2*fact*a,b+2*e,strcat(" (",num2str(d),")"));
text(2*fact*a,b+3*e,strcat(" (",num2str(d2),")"));
text(2*fact*a,b+4*e,strcat(" (",num2str(d1),")"));
usleep(0.01);
```

elipses4.m (4)

```
  hold off;
end
endfunction
```