## Draw

draw(f,x) draws a graph of function f of x.

```
draw(x^2,x)
```



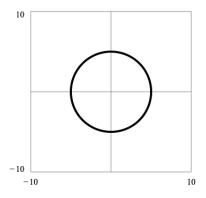
The vectors xrange and yrange control the scale of the graph.

```
xrange = (-1,1)
yrange = (0,2)
draw(x^2)
```



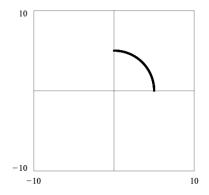
Parametric drawing occurs when a function returns a vector. The vector trange controls the parametric range. The default is trange=(-pi,pi). In the following example, draw varies theta over the default range  $-\pi$  to  $+\pi$ .

```
xrange = (-10,10)
yrange = (-10,10)
f = 5 (cos(theta),sin(theta))
draw(f,theta)
```



In the following example, trange is reduced to draw a quarter circle instead of a full circle.

```
trange = (0,pi/2)
f = 5 (cos(theta),sin(theta))
draw(f,theta)
```



Draw a lemniscate.

```
trange = (-pi,pi)
X = cos(t) / (1 + sin(t)^2)
Y = sin(t) cos(t) / (1 + sin(t)^2)
f = 5 (X,Y)
draw(f,t)
```



Draw a cardioid.

```
r = (1 + cos(t)) / 2
u = (cos(t),sin(t))
f = r u
xrange = (-1,1)
yrange = (-1,1)
trange = (0,2pi)
draw(f,t)
```

