```
> # Blatt 6
> # Aufgabe 6.1
> restart;
> p := x -> a*x^2 + b*x + c;
```

$$p := x \to a\,x^2 + b\,x + c \tag{1}$$

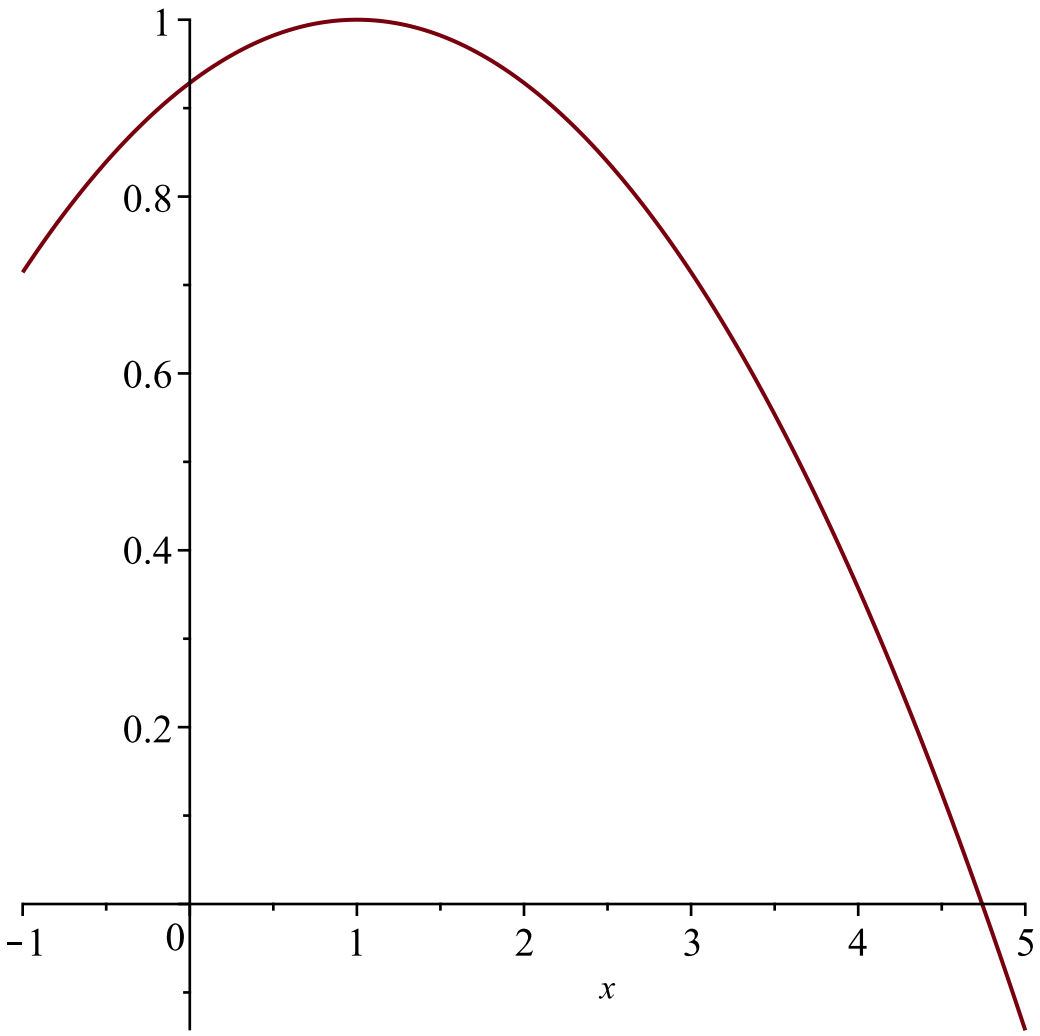
```
> sol := solve({p(1)=1, p(2)=p(0), p(3)=2*p(4)}, {a,b,c});
```

$$sol := \left\{a = -\frac{1}{14},\ b = \frac{1}{7},\ c = \frac{13}{14}\right\} \tag{2}$$

```
> psol := eval(p(x), sol);
```

$$psol := -\frac{1}{14}\,x^2 + \frac{1}{7}\,x + \frac{13}{14} \tag{3}$$

```
> plot(psol, x=-1..5);
```



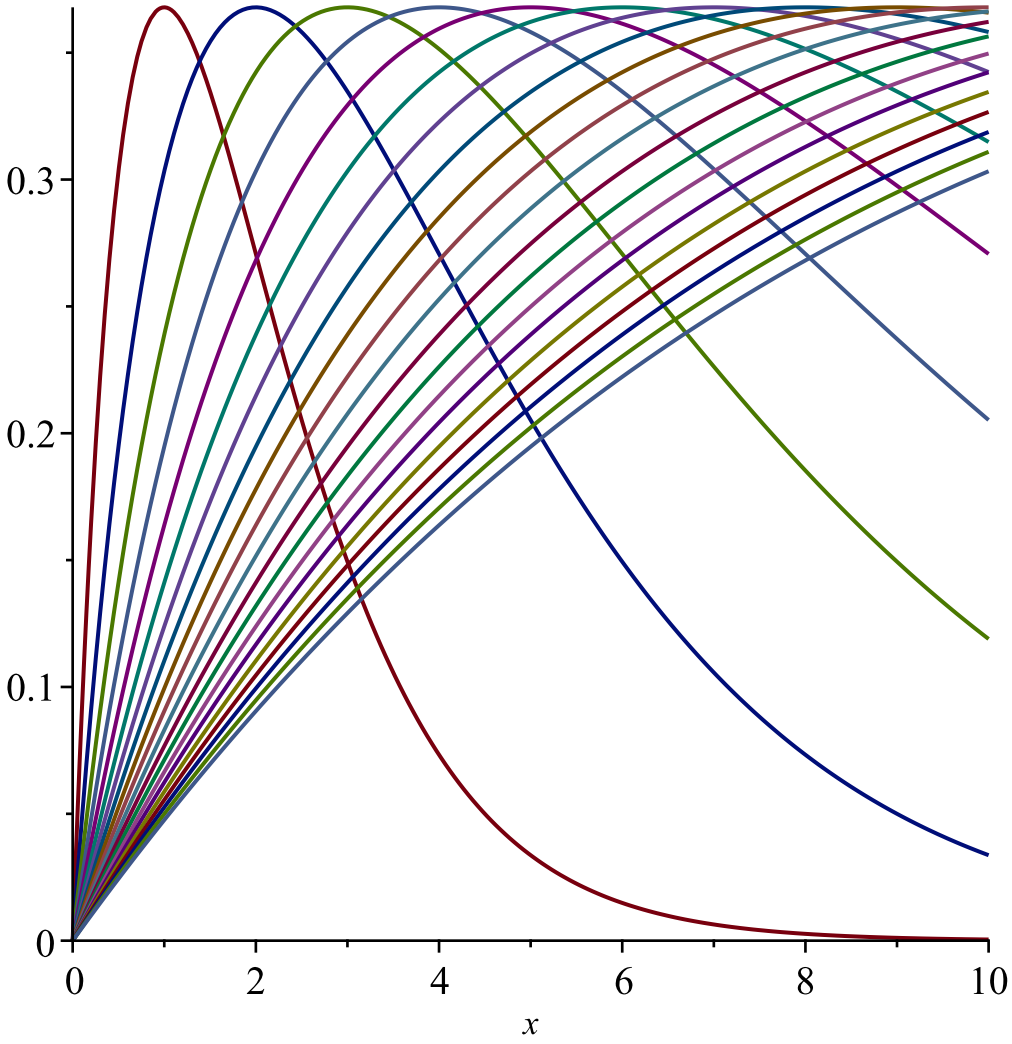

```
> restart;
> fn := (x/n)*exp(-x/n);
```

$$fn := \frac{x\,e^{-\frac{x}{n}}}{n} \tag{4}$$

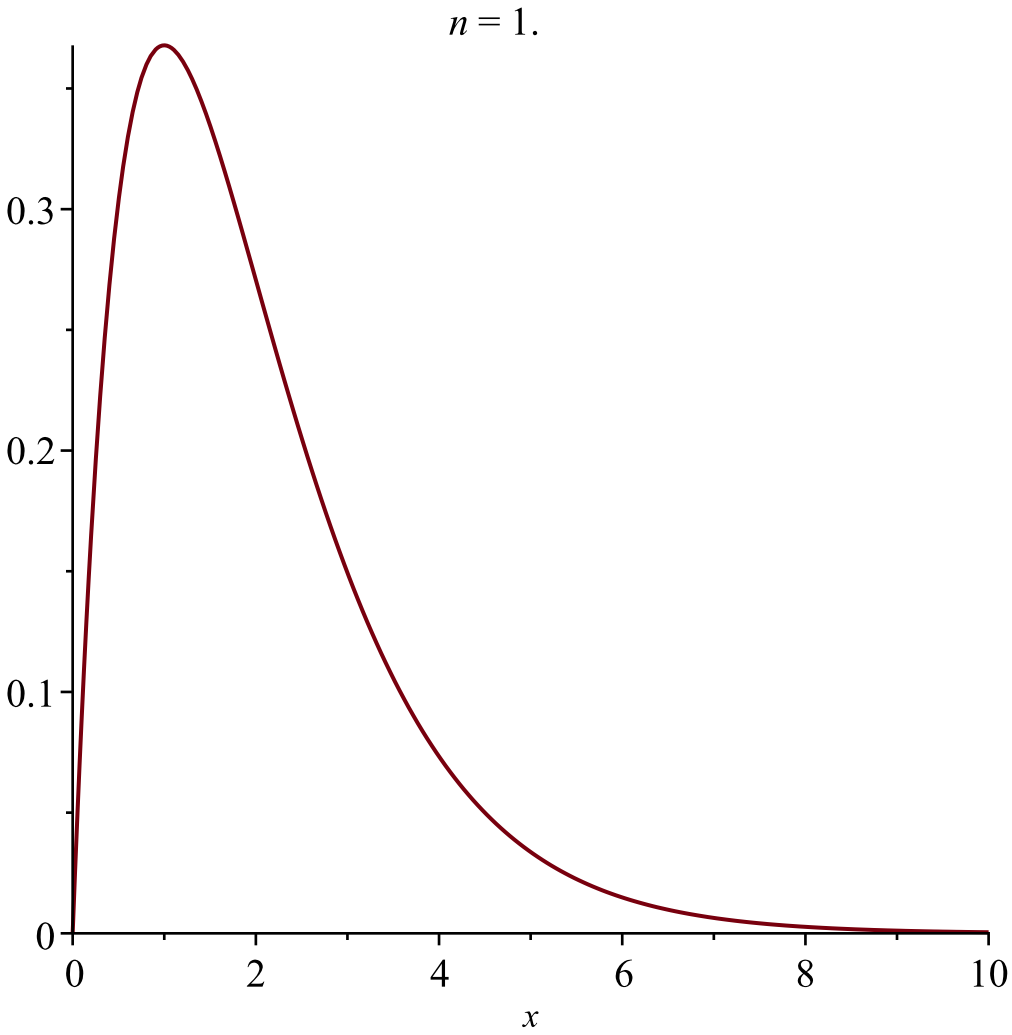
```
> P := [seq(fn, n=1..20)];
```

$$P := \left[x e^{-x}, \frac{1}{2} x e^{-\frac{1}{2}x}, \frac{1}{3} x e^{-\frac{1}{3}x}, \frac{1}{4} x e^{-\frac{1}{4}x}, \frac{1}{5} x e^{-\frac{1}{5}x}, \frac{1}{6} x e^{-\frac{1}{6}x}, \frac{1}{7} x e^{-\frac{1}{7}x}, \frac{1}{8} x e^{-\frac{1}{8}x}, \right.$$
$$\frac{1}{9} x e^{-\frac{1}{9}x}, \frac{1}{10} x e^{-\frac{1}{10}x}, \frac{1}{11} x e^{-\frac{1}{11}x}, \frac{1}{12} x e^{-\frac{1}{12}x}, \frac{1}{13} x e^{-\frac{1}{13}x}, \frac{1}{14} x e^{-\frac{1}{14}x},$$
$$\left. \frac{1}{15} x e^{-\frac{1}{15}x}, \frac{1}{16} x e^{-\frac{1}{16}x}, \frac{1}{17} x e^{-\frac{1}{17}x}, \frac{1}{18} x e^{-\frac{1}{18}x}, \frac{1}{19} x e^{-\frac{1}{19}x}, \frac{1}{20} x e^{-\frac{1}{20}x} \right] \quad (5)$$

```
> plot(P, x=0..10);
```




```
> with(plots):
> animate(plot, [fn, x=0..10], n=1..20, frames=20);
```



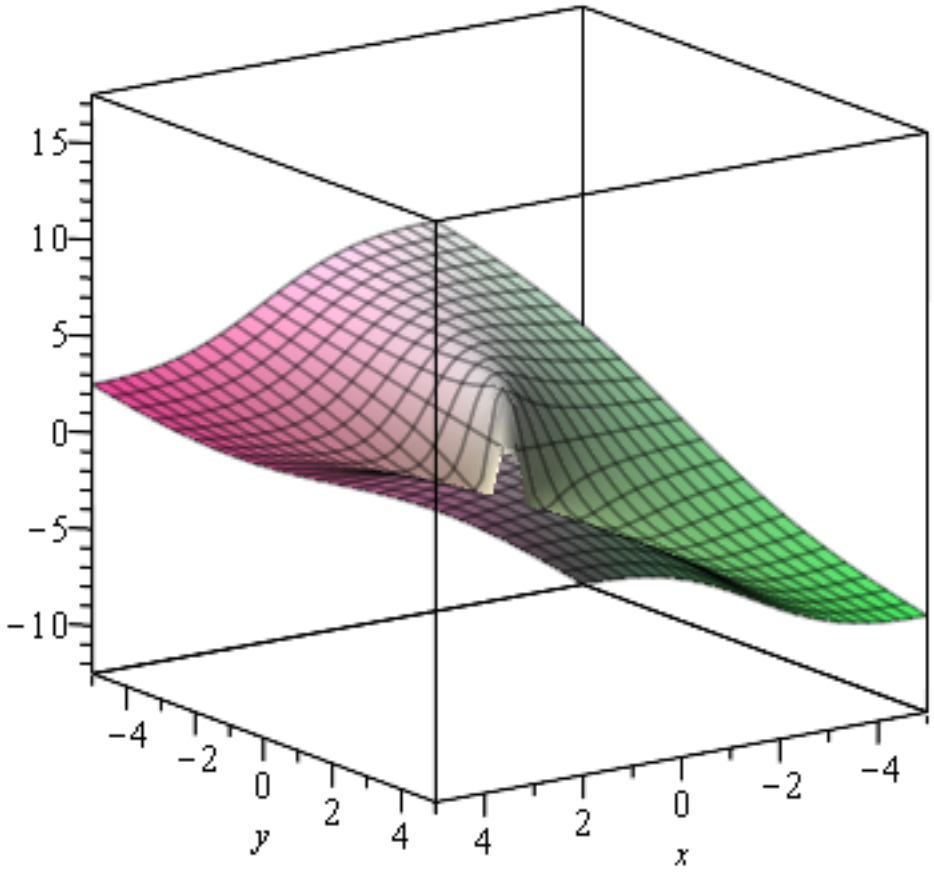

```
> restart;
> f := (x,y) -> 2*x + y;
```

$$f := (x, y) \to 2\,x + y \tag{6}$$

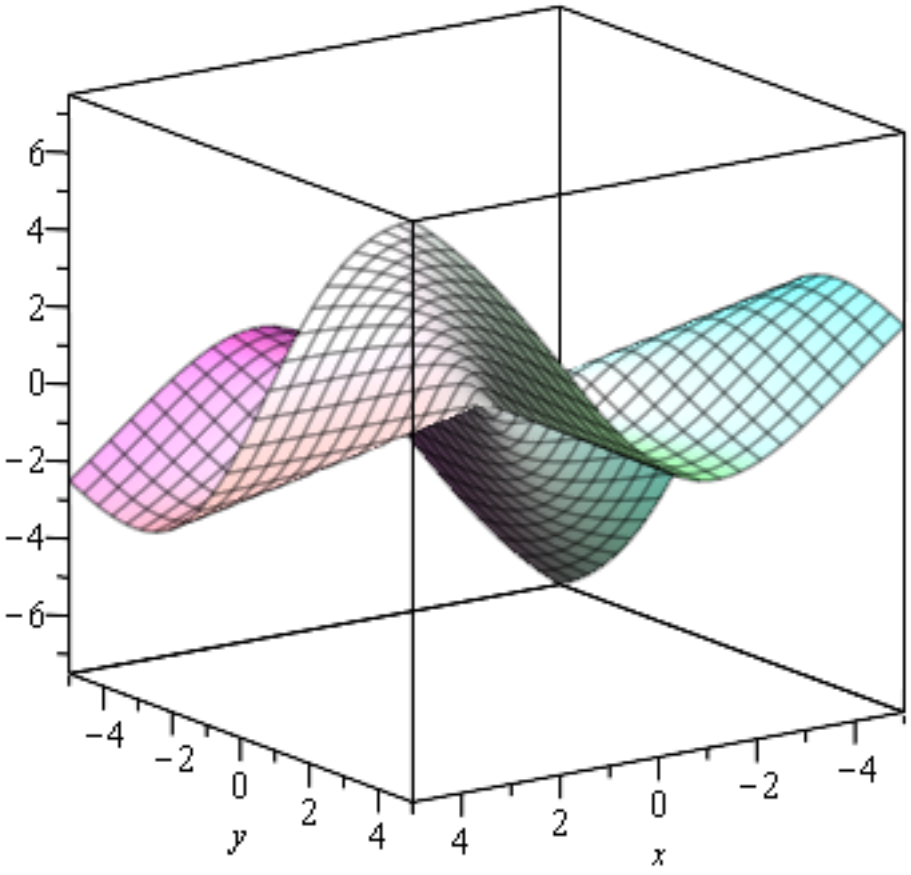
```
> g := (x,y) -> x*y/(x^2+y^2);
```

$$g := (x, y) \to \frac{x\,y}{x^2 + y^2} \tag{7}$$

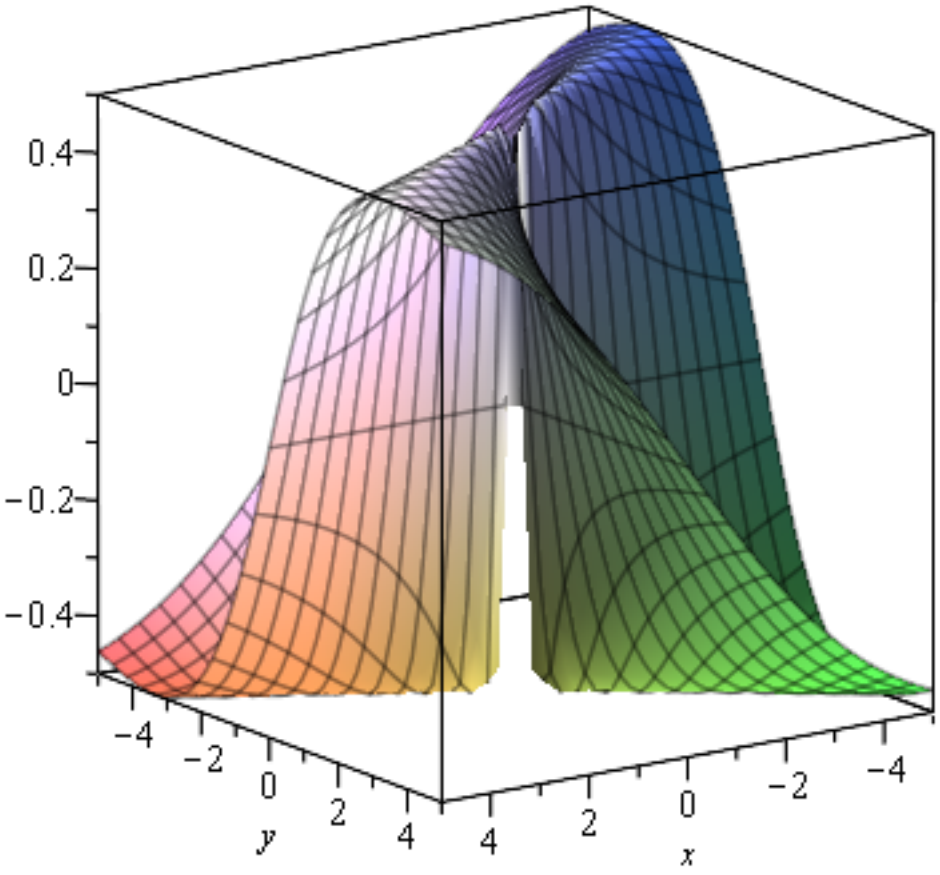
```
> plot3d(f(x,y) + 5*g(x,y), x=-5..5, y=-5..5);
```



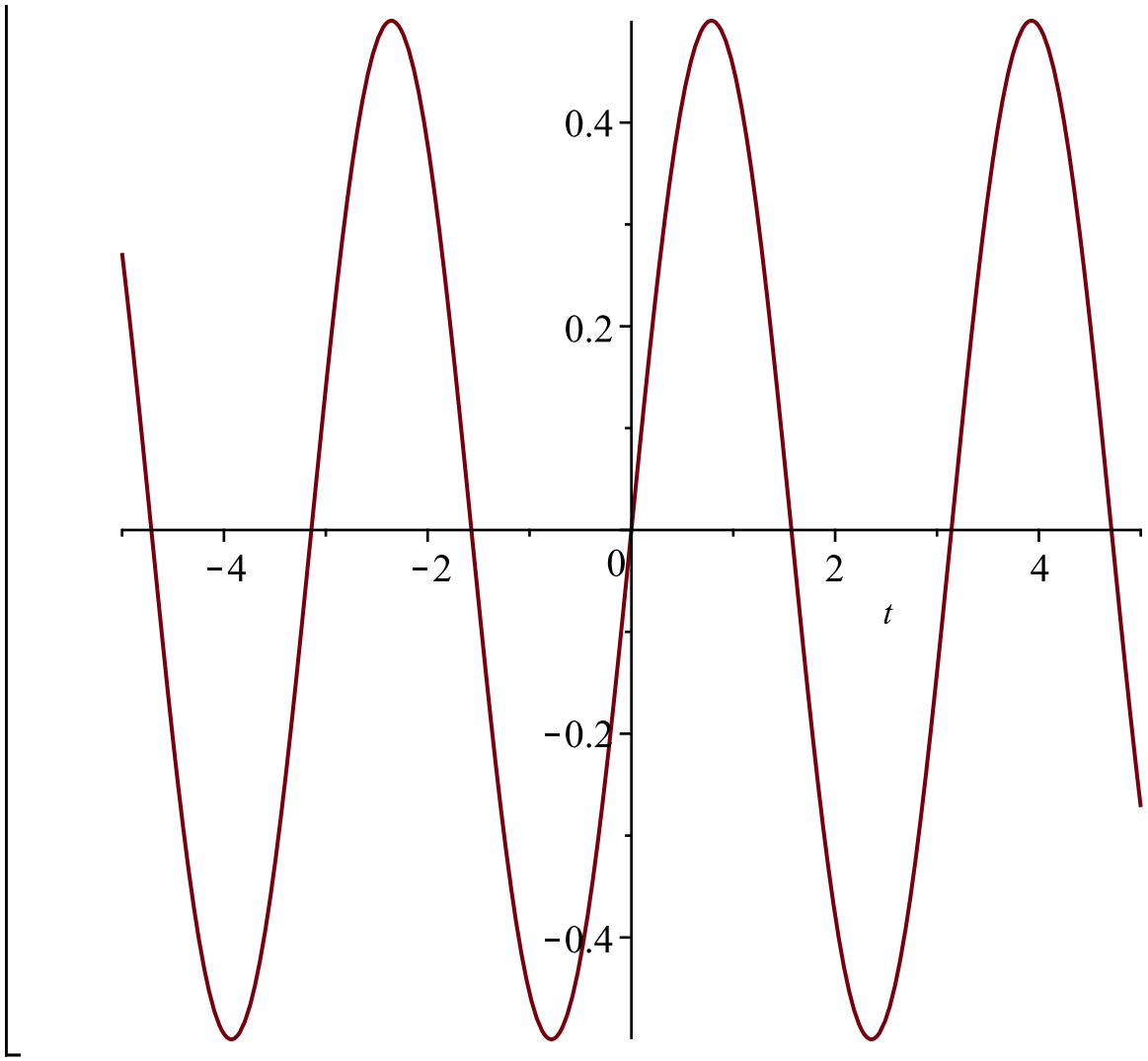

```
> plot3d(f(x,y)*g(x,y), x=-5..5, y=-5..5);
```




```
> plot3d(g(2*x,3*y), x=-5..5, y=-5..5);
```




```
> plot(g(cos(t),sin(t)), t=-5..5);
```


0.4
0.2
-4
-2
0
2
4
t
-0.2
-0.4