```
>> syms x y z
>> g=sin(x*y)+cos(x*y^2)

g =

cos(x*y^2) + sin(x*y)

>> diff(g,x)

ans =

y*cos(x*y) - y^2*sin(x*y^2)

>> diff(g,y)

ans =

x*cos(x*y) - 2*x*y*sin(x*y^2)

>> diff(diff(diff(g,x),y),y)

ans =

4*x^2*y^4*sin(x*y^2) - 2*x*sin(x*y) - 2*sin(x*y^2) - x^2*y*cos(x*y) - 10*x*y^2*cos(x*y^2)

>>f=x*y

f =

x*y

>> int(int(f,y,-3,4),x,1,2)

ans =

21/4

>>int(int(f,y,0,x),x,1,2)

ans =

15/8

>> h=x*y*z+2*cos(x)-3*z^2-asin(y)

h =

- 3*z^2 + x*y*z - asin(y) + 2*cos(x)
```

```
>> hx=diff(h,x)

hx =

y*z - 2*sin(x)

>> hy=diff(h,y)

hy =

x*z - 1/(1 - y^2)^(1/2)

>> hz=diff(h,z)

hz =

x*y - 6*z

>> gradh=[hx;hy;hz]

gradh =

      y*z - 2*sin(x)
 x*z - 1/(1 - y^2)^(1/2)
          x*y - 6*z

>>
```