```matlab
clear all
syms x y z
F=[x^2+y^2 2*x -y];
f=x*y*z;
var=[x y z];
divF=divergence(F,var)
curlF=curl(F,var)
grandf=gradient(f,var)
```

divF =

*2*x*

curlF =

*   -1*
*   0*
*2 - 2*y*

grandf =

*y*z*
*x*z*
*x*y*


```matlab
clear all
syms t
x=t; y=1-t^2;
t1=-1; t2=1;
F=[3*x^2-y 2*x];
ds=[diff(x,t);diff(y,t)];
I=int(F*ds,t,t1,t2);
disp(['I= ',char(I)])
```

I= -2

```matlab
clear all
syms t
x=t; y=t^2;
t1=-1; t2=2;
F=[x*y x+y];
ds=[diff(x,t);diff(y,t)];
I=int(F*ds,t,t1,t2);
disp(['I= ',char(I)])
```

I= 69/4

```matlab
clear all
syms t
```

```
x1=t; y1=0;
t1=0; t2=1;
F=[x1-y1 x1+y1];
ds=[diff(x1,t);diff(y1,t)];
I1=int(F*ds,t,t1,t2);

x2=1-t; y2=t;
t3=0; t4=1;
F=[x2-y2 x2+y2];
ds=[diff(x2,t);diff(y2,t)];
I2=int(F*ds,t,t3,t4);

x3=0; y3=t;
t5=1; t6=0;
F=[x3-y3 x3+y3];
ds=[diff(x3,t);diff(y3,t)];
I3=int(F*ds,t,t5,t6);

I=I1+I2+I3;
disp(['I= ',char(I)])

I= 1

clear all
syms t
x=t^2; y=t;
t1=2; t2=-1;
F=[x^2 -y];
ds=[diff(x,t);diff(y,t)];
I=int(F*ds,t,t1,t2);
disp(['I= ',char(I)])

I= -39/2

clear all
syms t
x=cos(t); y=sin(t);
t1=0; t2=pi/2;
F=[y -x];
ds=[diff(x,t);diff(y,t)];
I=int(F*ds,t,t1,t2);
disp(['I= ',char(I)])

I= -pi/2

clear all
syms t
x=1+t; y=1+2*t;
t1=0; t2=1;
F=[x*y y-x];
ds=[diff(x,t);diff(y,t)];
I=int(F*ds,t,t1,t2);
disp(['I= ',char(I)])

I= 25/6
```

```matlab
clear all
syms t
x=-2*t; y=2*t;
t1=-1; t2=1;
F=[2*x+2*y 2*x+2*y];
ds=[diff(x,t);diff(y,t)];
I=2*int(F*ds,t,t1,t2);
disp(['I= ',char(I)])

%%or
clear all
syms t
x=2*cos(t); y=2*sin(t);
t1=0; t2=2*pi;
F=[2*(x+y) 2*(y+x)];
ds=[diff(x,t);diff(y,t)];
I=int(F*ds,t,t1,t2);
disp(['I= ',char(I)])

I= 0
I= 0
```

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