```
%% Gradient
clc
clear all
syms x y
f = input( 'Enter the function f(x,y):');
f1 = diff(f,x);
f2 = diff(f,y);
P = inline(vectorize(f1), 'x', 'y')
Q = inline(vectorize(f2), 'x','y')
x = linspace(-2, 2, 10);
y = x;
[X,Y] = meshgrid(x,y);
U = P(X,Y);
% V = Q(X,Y);
V= -4*ones(size(U));
quiver(X,Y,U,V)
axis on
xlabel('x')
ylabel('y')
hold on
ezcontour(f,[-2 2])
```

OUTPUT :

3. Find the Gradient of the function $F = x^2 - 4y$ at the point $(2, -1)$

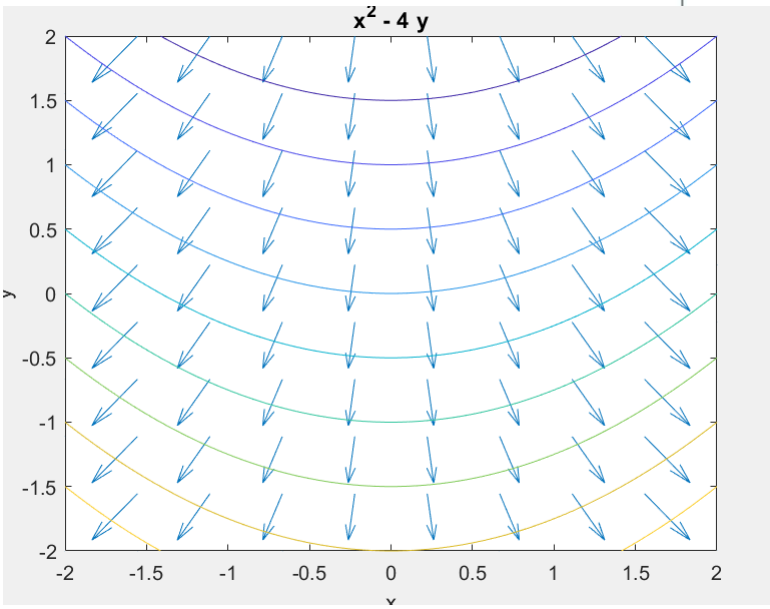
```
Enter the function f(x,y):x^2 - 4*y

P =

     Inline function:
     P(x,y) = 2.*x


Q =

     Inline function:
     Q(x,y) = -4
```



6. Find the value of a gradient of the function $f(x, y) = x^3 + y^3$ at the point (1,1,2) and visualize it.

```
Enter the function f(x,y):x^3 + y^3

P =

     Inline function:
     P(x,y) = 3.*x.^2


Q =

     Inline function:
     Q(x,y) = 3.*y.^2
```