**Answer on Question#38332 - Math - Calculus**

Find the function's domain and range. Next, describe level curves of the funtions
a)f(x,y)=x-y
b)f(x,y)=x^2+y^2
c)f(x,y,z)=x+y+z

## Solution

a)f(x,y)=x-y

The domain is all the values that go into a function. Both x and y can be values from -infinity to +infinity (this is the domain)

The range is all the values that are produced by the function, i.e. the values of f(x,y) in this example can range from -infinity to +infinity

Direct Line - graph of a linear function y = x. This straight line passes through the origin. As the domain and range are all the values from -infinity to +infinity that the graph of function is all points in the plane.

b)f(x,y)=x^2+y^2

The domain is all the values that go into a function. Both x and y can be values from -infinity to +infinity (this is the domain)

The range is all non-negative real numbers, $\{f \in R : f \geq 0\}$

The graph of function $x^2+y^2 = r^2$ is a circle centered at the origin. As the domain is the values from -infinity to +infinity that the graph of function is all points in the plane.

c)f(x,y,z)=x+y+z

The domain is all the values that go into a function. All x,y and z can be values from -infinity to +infinity (this is the domain)

The range is all real numbers.

Graph of this function is the whole plane in three-dimensional space.