# Quiz 6 Solution

## Problem 1

Let $y=x$, then $\lim\limits_{(x,y)\to(0,0)} \frac{xy}{|xy|} = \lim\limits_{x\to 0} \frac{x^2}{|x^2|} = 1$

Let $y=-x$, then $\lim\limits_{(x,y)\to(0,0)} \frac{xy}{|xy|} = \lim\limits_{x\to 0} \frac{-x^2}{|-x^2|} = -1$

$1 \neq -1$, so no limit

## Problem 2.

$f(1,4) = \sum\limits_{n=0}^{+\infty} \left(\frac{1}{4}\right)^n = \frac{1}{1-\frac{1}{4}} = \frac{4}{3}$

so level curve is $\sum\limits_{n=0}^{+\infty} \left(\frac{x}{y}\right)^n = \frac{4}{3}$