Q-1) Find $\lim\limits_{(x,y)\to(0,0)} \dfrac{x^3 y}{x^6 + y^2}$, if the limit exists. If it does not exit, then explain why .

Solution:

$$\frac{x^3 y}{x^6 + y^2} = \frac{\lambda}{1 + \lambda^2}$$

when $y = \lambda x^3$, so the limit does not exist.