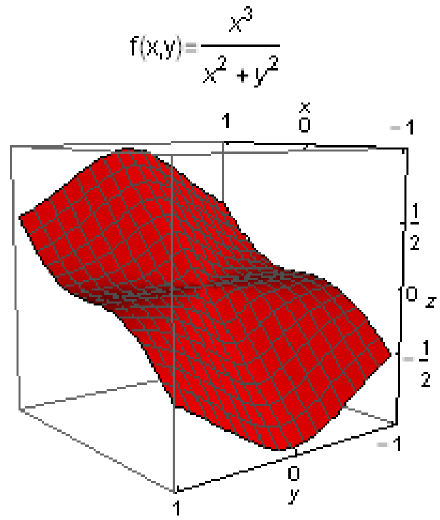
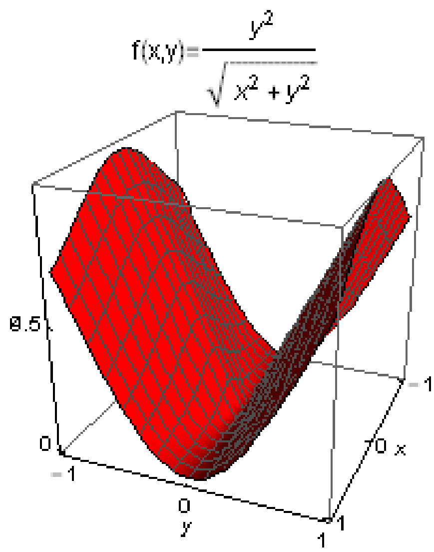
2

Exercício 2.1

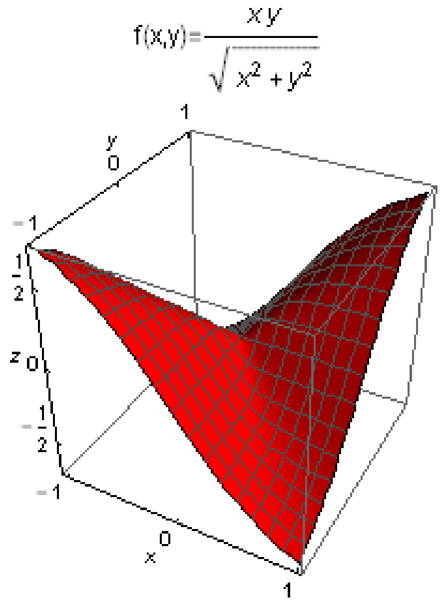
a)



b)

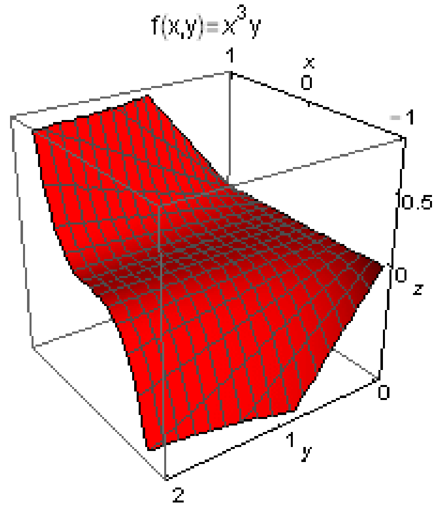


c)



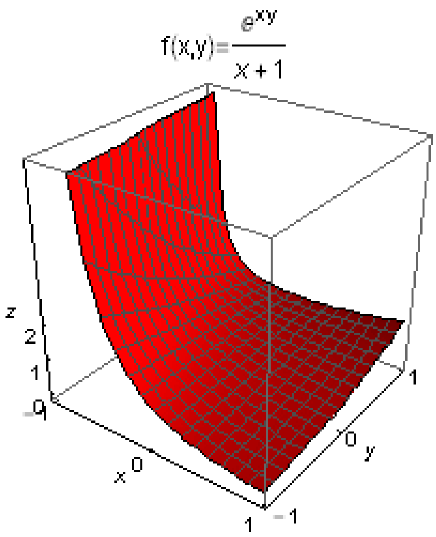
Exercício 2.2

a)



$$\lim_{(x,y)\to(0,1)} f(x,y) = 0$$

b)



$$\lim_{(x,y)\to(0,0)} f(x, y) = 1$$

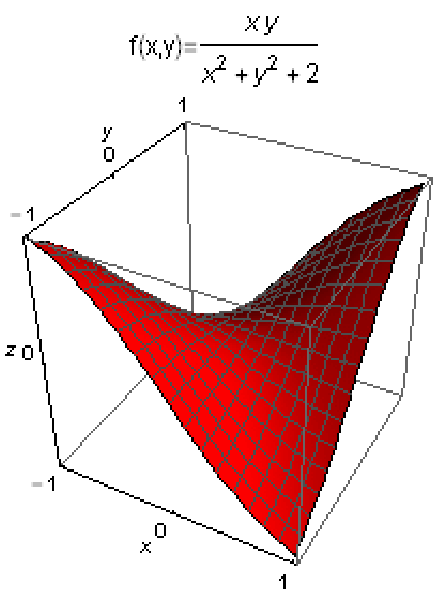
c)

$$\lim_{x\to 1} (x^2, e^x) = (1, e)$$

d)

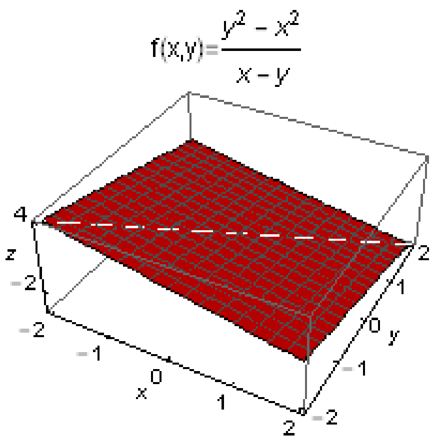
$$\lim_{(x,y)\to(0,0)} \left(\frac{\text{Cos}[x]}{x^2 + y^2 + 1}, e^{x^2}\right) = (1, 1)$$

e)



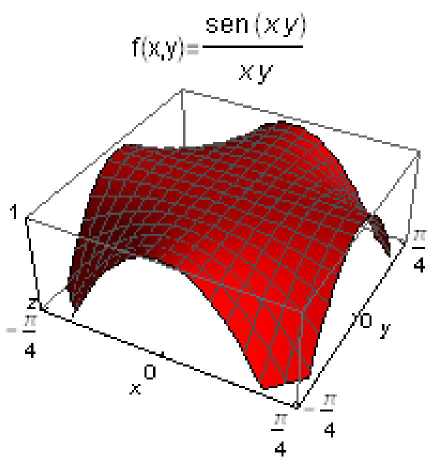
$$\lim_{(x,y)\to(0,0)} f(x, y) = 0$$

f)



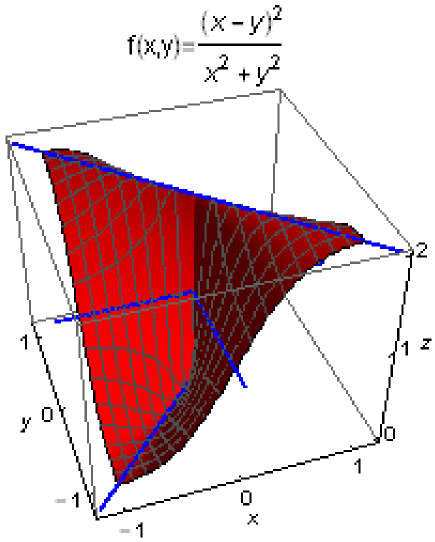
$\lim\limits_{(x,y)\to(1,1)} f(x,y) = -2$

g)



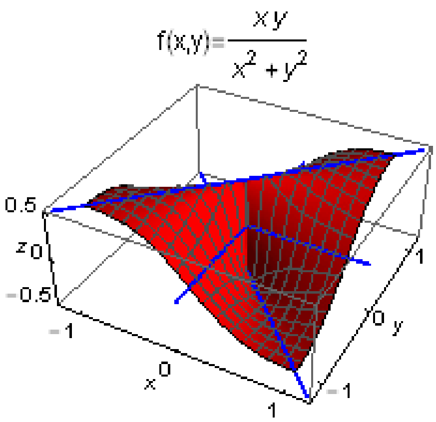
$\lim\limits_{(x,y)\to(0,0)} f(x,y) = 1$

h)



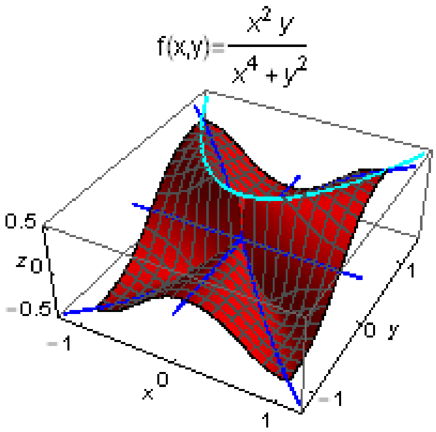
Não existe $\lim\limits_{(x,y)\to(0,0)} f(x, y)$

i)



Não existe $\lim\limits_{(x,y)\to(0,0)} f(x, y)$

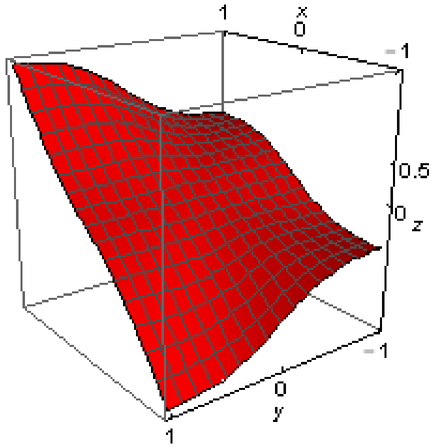
j)



Não existe $\lim_{(x,y)\to(0,0)} f(x,y)$

k)

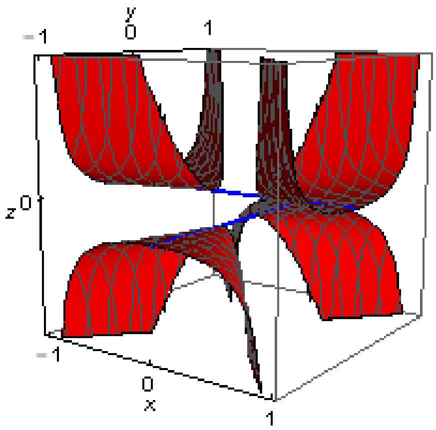
$$f(x,y)=\frac{x^3 y}{x^2+y^2}+x$$



$\lim_{(x,y)\to(0,0)} f(x,y) = 0$

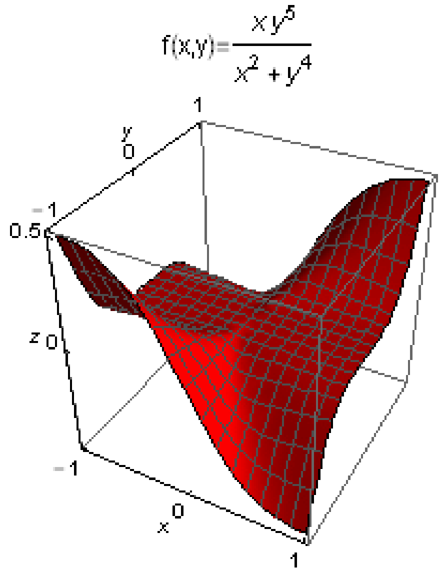
l)

$$f(x,y)=\frac{y^2}{x^2-y^2}$$



Não existe $\lim_{(x,y)\to(0,0)} f(x,y)$

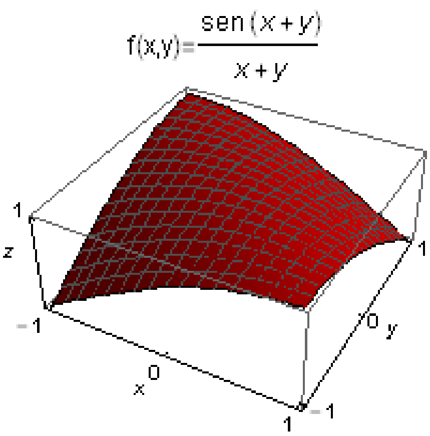
m)



$$\lim_{(x,y)\to(0,0)} f(x, y) = 0$$

Exercício 2.3

a)



$f(0, 0) = 1$

b)

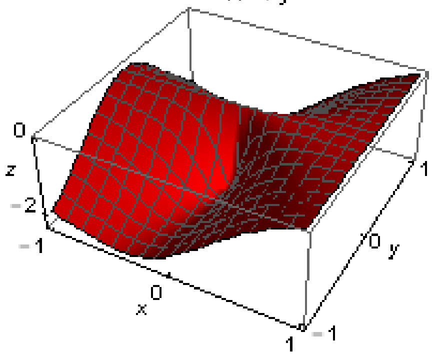
Não admite prolongamento contínuo à origem (ver exercício 2.2 i))

c)

$f(0, 0) = 0$ (ver exercício 2.1 c))

d)

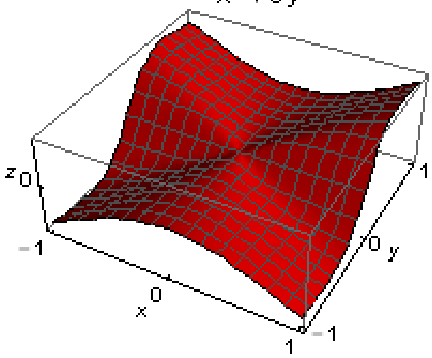
$$f(x,y)=\frac{2(x-1)y^2}{x^2+y^2}$$



Não admite prolongamento contínuo à origem

e)

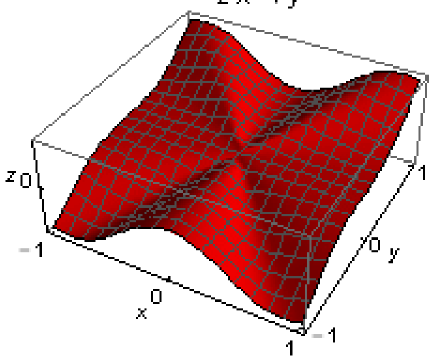
$$f(x,y)=\frac{2x^2y}{x^2+3y^2}$$



f (0, 0) = 0

f)

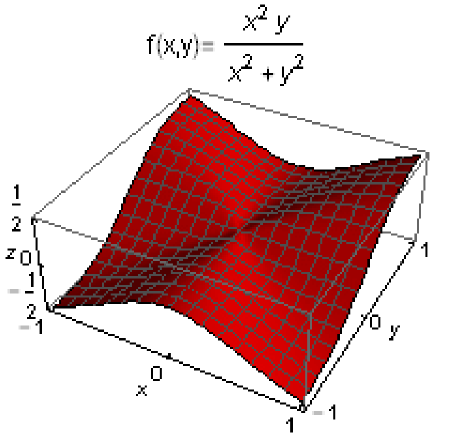
$$f(x,y)=\frac{x^2y^3}{2x^4+y^4}$$



f (0, 0) = 0

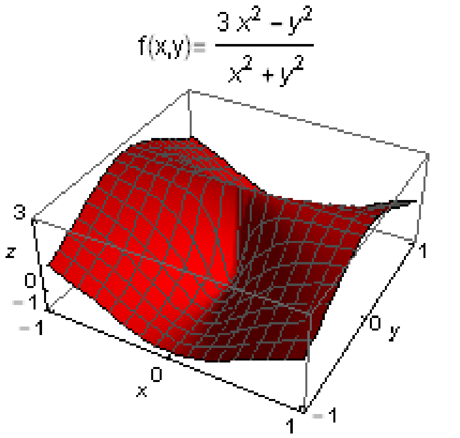
Exercício 2.4

a)



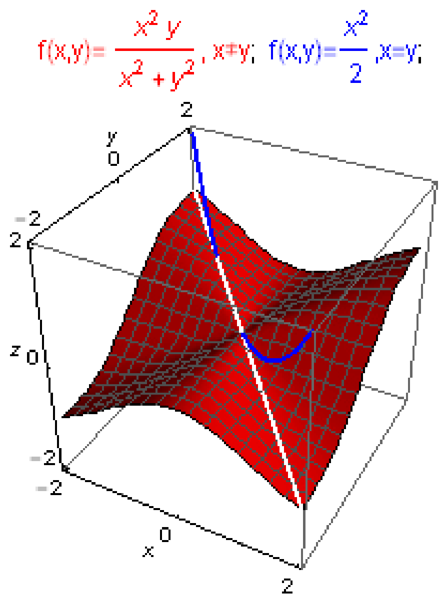
A função é contínua em $\mathbb{R}^2$

b)



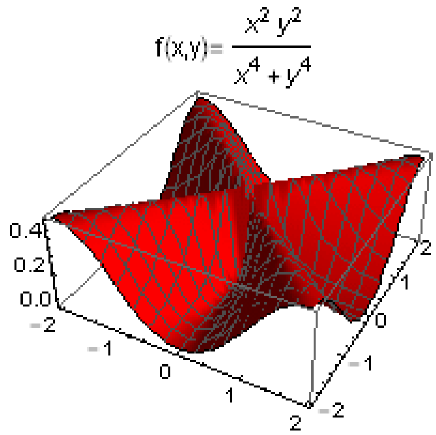
A função é contínua em $\mathbb{R}^2\setminus\{(0,\ 0)\}$

c)



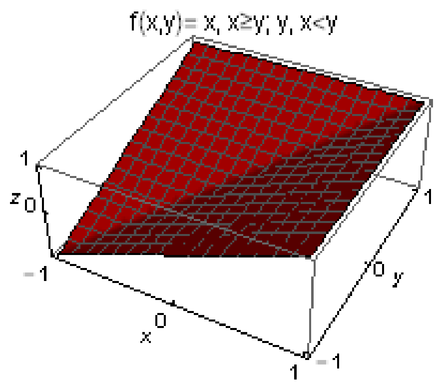
A função é contínua em $\{(x, y) \in \mathbb{R}^2 : x \neq -y\} \cup \{(0, 0), (-1, 1)\}$

d)



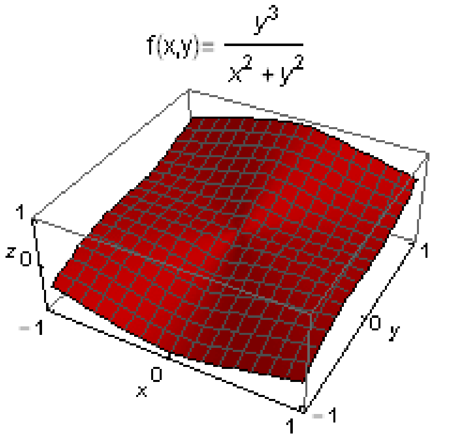
A função é contínua em $\mathbb{R}^2 \setminus \{(0, 0)\}$

e)



A função é contínua em $\mathbb{R}^2$

f)



A função é contínua em $\mathbb{R}^2$