

## Cálculo Diferencial e Integral 2 Respostas à Ficha de Trabalho 3

- (a)  $\frac{\partial f}{\partial x} = \frac{2x}{x^2+y^2}$ ;  $\frac{\partial f}{\partial y} = \frac{2y}{x^2+y^2}$ .

(b)  $\frac{\partial g}{\partial x} = -\frac{y}{x^2}$ ;  $\frac{\partial g}{\partial y} = \frac{1}{x}$ .
- $\frac{\partial f}{\partial x}(0,0) = 0$ ;  $\frac{\partial f}{\partial y}(0,0) = 1$ .
- (a)  $\begin{bmatrix} y & x \\ \frac{1}{x} & \frac{1}{y} \end{bmatrix}$

(b)  $\begin{bmatrix} \frac{y}{2\sqrt{xy}} & \frac{x}{2\sqrt{xy}} & 0 \\ 0 & ze^{yz} & ye^{yz} \end{bmatrix}$

(c)  $\begin{bmatrix} 0 & 2y & 0 \\ z & -1 & x \\ y & x & 1 \end{bmatrix}$

(d)  $[-yz \quad -xz + 2y \quad -xy + 2]$

(e)  $\begin{bmatrix} 3t^2 \\ -e^{-t} \\ -\frac{1}{t^2} \end{bmatrix}$
- (a) 2

(b)  $e$
- $(1, -\frac{8}{5})$  por exemplo.
- Basta ver que  $\frac{\partial f}{\partial x}(0,0) = \frac{\partial f}{\partial y}(0,0) = 0$ ,  $\lim_{(x,y) \rightarrow (0,0)} \frac{|f(x,y)|}{\sqrt{x^2+y^2}} = 0$ .
- Apenas a função  $h$  é diferenciável na origem.
- (a)  $\frac{\partial f}{\partial x}(1,0) = 1$ ,  $\frac{\partial f}{\partial y}(1,0) = 0$

(b) 2

(c)  $\frac{18}{13}$