Cálculo Vetorial **Exercícios - Folha 7**

1. Seja R o rectângulo $[1,2]\times[0,1]$. Calcule o integral duplo $\iint_R f(x,y)\,dxdy$ onde $f(x,y)$ é dado por:

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

   (b) $f(x,y) = xy$

   (c) $f(x,y) = y\cos xy$

   (d) $f(x,y) = xe^{xy}$

2. Calcule o volume do conjunto dado:

   (a) $E = \{(x,y,z) \in \mathbb{R}^3 \,|\, 1 \leq x \leq 2,\ 0 \leq y \leq 1,\ 0 \leq z \leq x + y + 2\}$

   (b) $E = \{(x,y,z) \in \mathbb{R}^3 \,|\, 0 \leq x \leq 2,\ 0 \leq y \leq 2,\ 0 \leq z \leq \sqrt{xy}\}$

3. Seja R o retângulo $[0,1]\times[0,1]$. Calcule os seguintes integrais:

   (a) $\displaystyle\iint_R x^3 + y^2\,dxdy$

   (b) $\displaystyle\iint_R (xy)^2\cos x^3\,dxdy$

   (c) $\displaystyle\iint_R \ln\left((x+10)(y+1)\right)dxdy$