

1. Esboce as seguintes regiões no plano:

- (a) $\{(x, y) \in \mathbb{R}^2; \quad 0 \leq x \leq 1, \quad x \leq y \leq \sqrt{x}\}$
- (b) $\{(x, y) \in \mathbb{R}^2; \quad 1 \leq x^2 + y^2 \leq 4\}$
- (c) $\{(x, y) \in \mathbb{R}^2; \quad x^2 - y^2 \leq 1, \quad -1 - x^2 \leq y \leq 1 + x^2\}$
- (d) $\{(x, y) \in \mathbb{R}^2; \quad \frac{x^2}{4} + \frac{y^2}{9} \leq 1, \quad 1 \leq x^2 + y^2\}$

2. Esboce as seguintes regiões no espaço:

- (a) $\{(x, y, z) \in \mathbb{R}^3; \quad 0 \leq x \leq 1, \quad 0 \leq y \leq 1, \quad 0 \leq z \leq x + 2y\}$
- (b) $\{(x, y, z) \in \mathbb{R}^3; \quad 0 \leq x \leq 1, \quad 0 \leq y \leq 1, \quad 0 \leq z \leq x^2 - y^2\}$
- (c) $\{(x, y, z) \in \mathbb{R}^3; \quad x^2 + y^2 \leq 1, \quad x^2 + y^2 \leq z \leq 2\}$
- (d) $\{(x, y, z) \in \mathbb{R}^3; \quad x^2 + y^2 \leq 1, \quad -1 - x^2 - y^2 \leq z \leq x^2 + y^2\}$
- (e) $\{(x, y, z) \in \mathbb{R}^3; \quad \frac{x^2}{4} + y^2 \leq 1, \quad 0 \leq z \leq \sqrt{x^2 + y^2}\}$
- (f) $\{(x, y, z) \in \mathbb{R}^3; \quad 1 \leq x^2 + y^2 \leq 4, \quad 0 \leq z \leq 2 - \sqrt{x^2 + y^2}\}$
- (g) $\{(x, y, z) \in \mathbb{R}^3; \quad x^2 + y^2 \leq z, \quad x^2 + y^2 + z^2 \leq 1\}$
- (h) $\{(x, y, z) \in \mathbb{R}^3; \quad x^2 - 2x + y^2 \leq 0, \quad 0 \leq z \leq 1\}$

3. Dê o nome e faça um esboço das superfícies dadas pelas equações abaixo.

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| a) $4x^2 + 9y^2 = 36 - z^2$ | b) $\frac{x^2}{36} = 4 - \frac{y^2}{25}$ | c) $x^2 - y^2 - z^2 = 0$ |
| d) $x^2 - y^2 - z^2 = 1$ | e) $x^2 - y^2 - z^2 = -1$ | f) $4z^2 - x^2 - y^2 = 1$ |
| g) $x^2 + 4z^2 - y = 0$ | h) $z = -x^2 + y^2$ | i) $z = xy$ |