



*Sets of complex numbers on the complex plane*

*Exercises, section 2*

## *Suggestion 1*



*House (fragment), Verona, Italy*

*Fig. B1-1: A suggestion to think about*

*Some region: Example 1*



*Fig. B1-2: A smaller region*

## Complex plane: Example 1

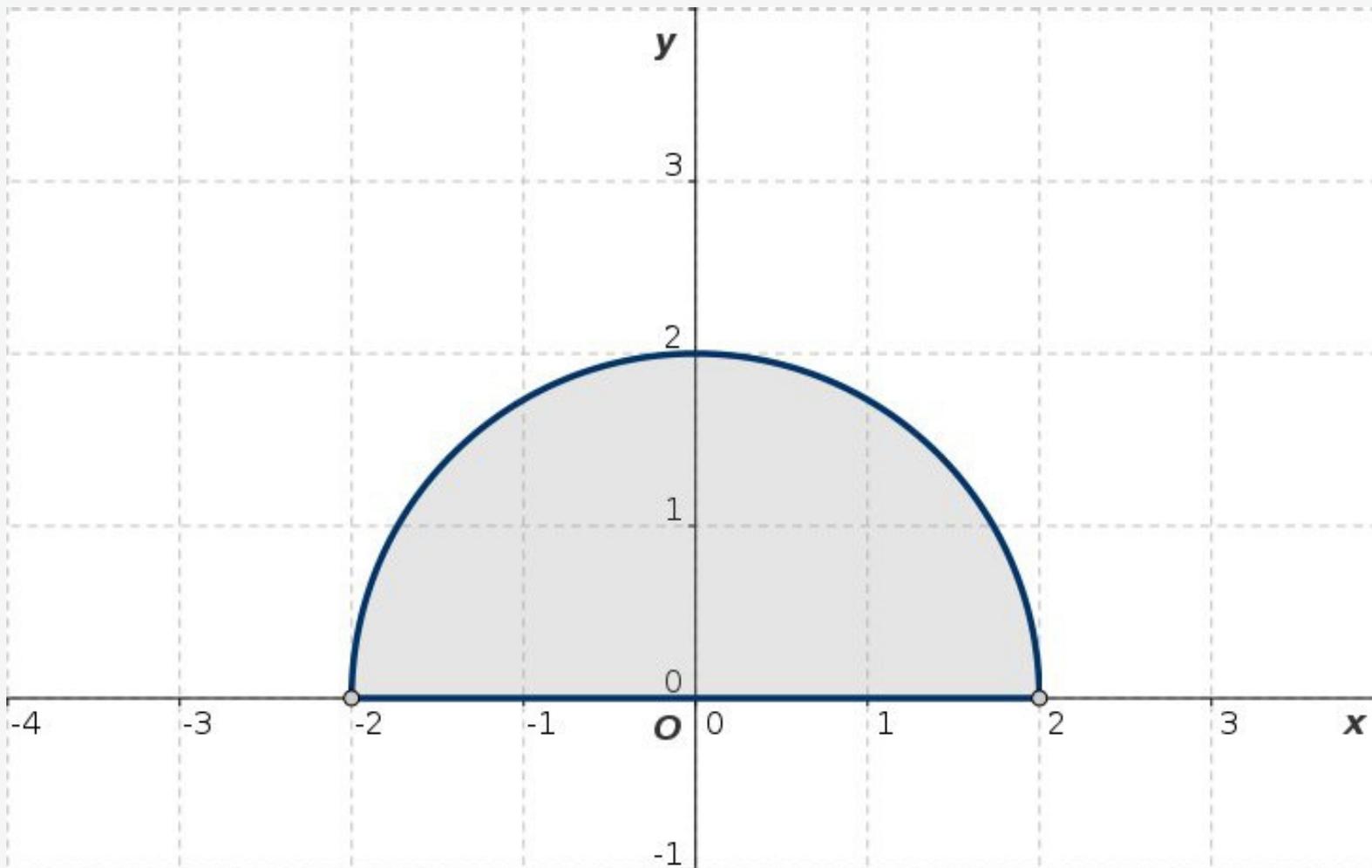
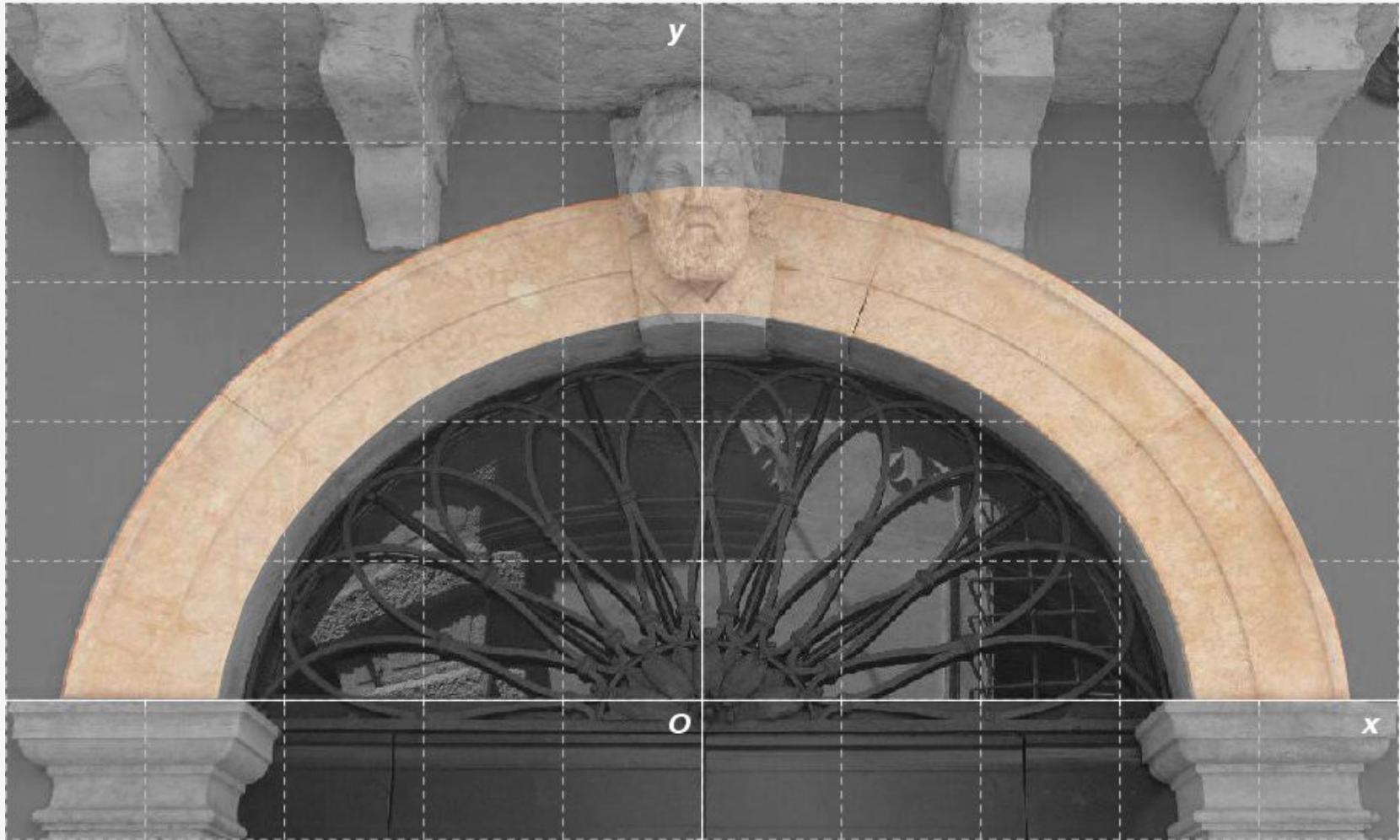


Fig. B1-3: Representation of the region

$$M_1 = \{ z \in \mathbf{C} \mid |z| \leq 2, \operatorname{Im}(z) \geq 0 \}$$

*Some region: Example 2*



*Fig. B2-1: Display of a region*

## Complex plane: Example 2

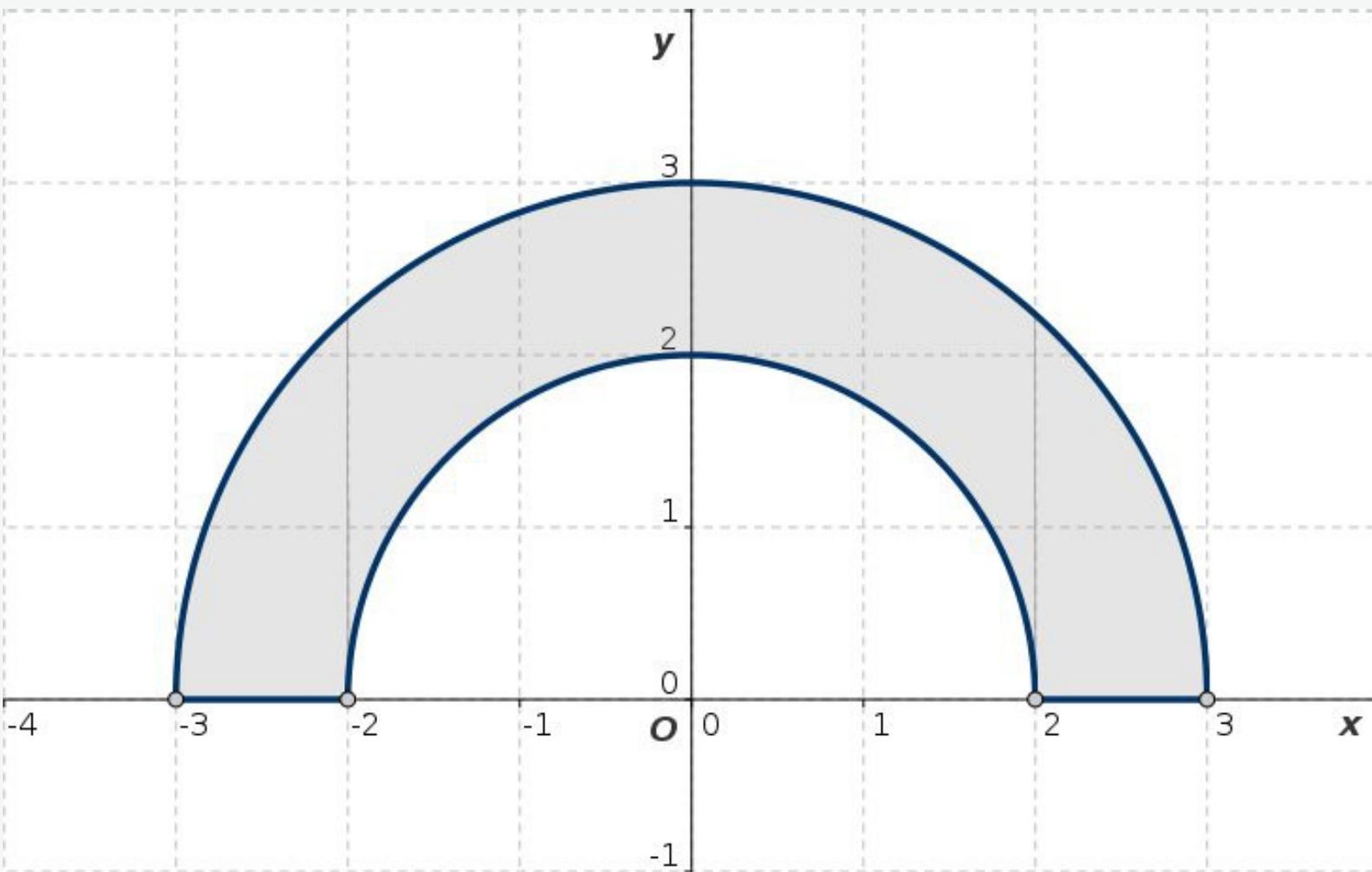


Fig. B2-2: Representation of the region

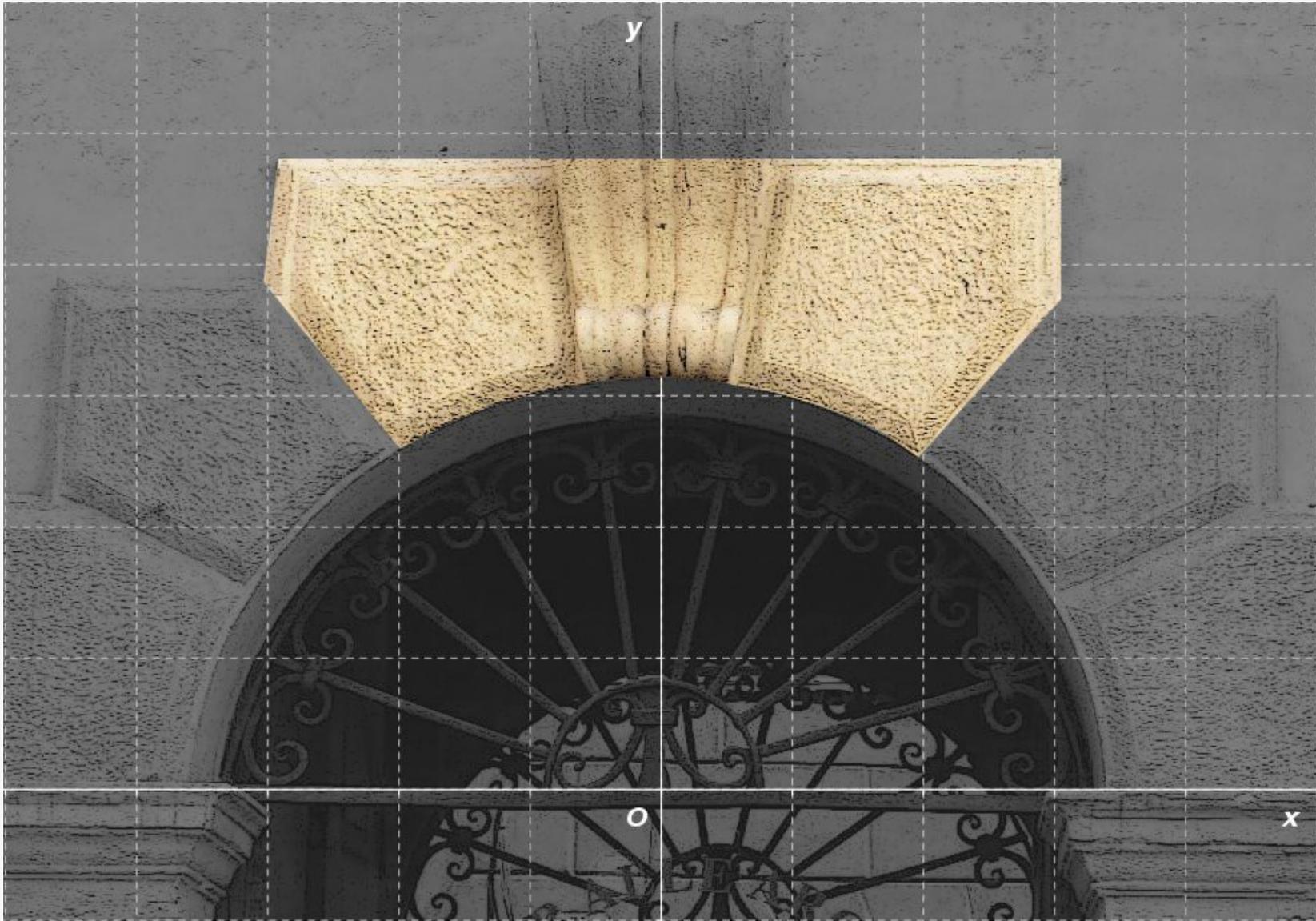
$$M_2 = \{ z \in \mathbf{C} \mid 2 \leq |z| \leq 3, \operatorname{Im}(z) \geq 0 \}$$

## Suggestion 2



*Fig. B3-1: Entrance, Verona, Ital*

*Some region: Example 3*



*Fig. B3-2: Display of a region*

# Complex plane: Example 3

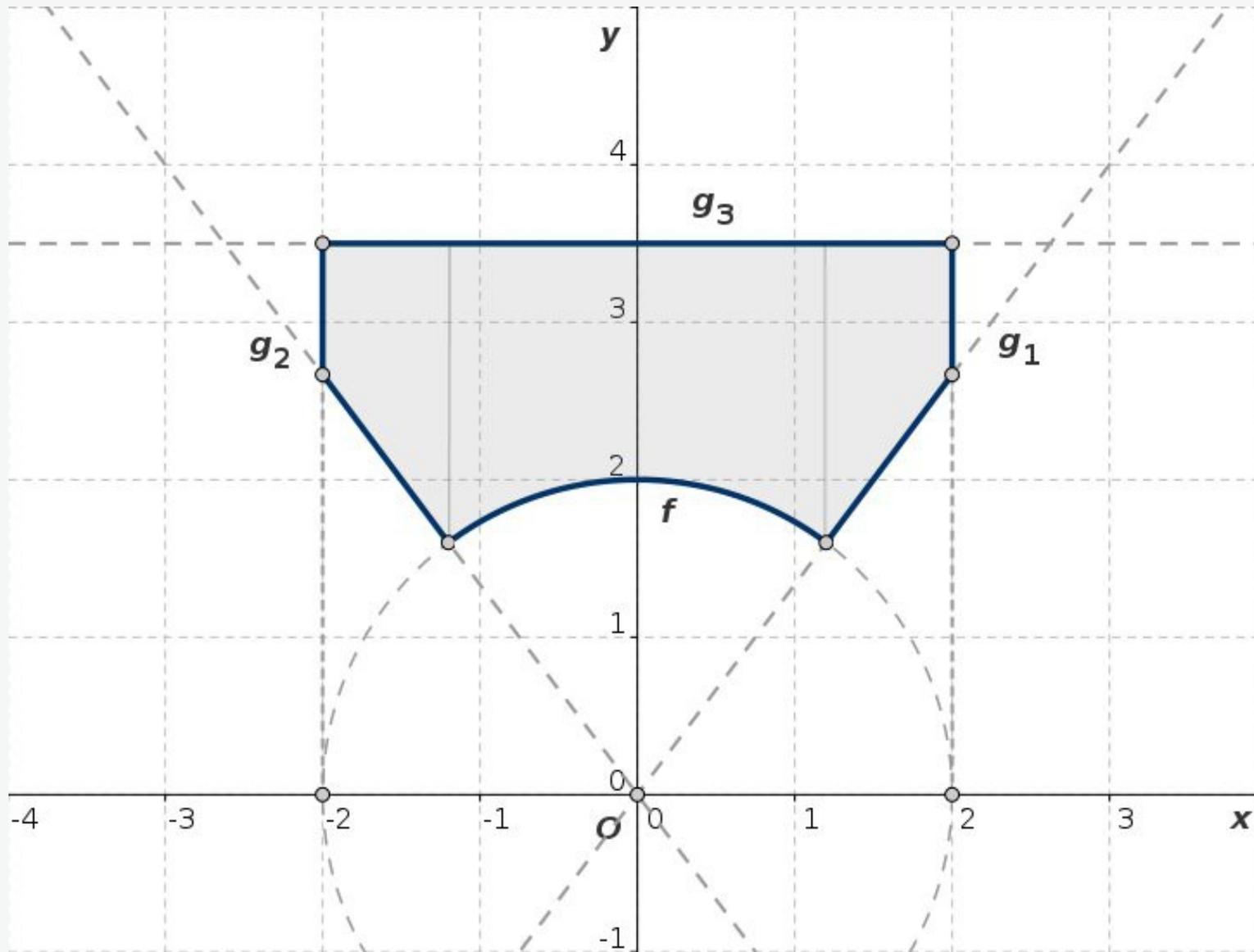


Fig. B3-3: Representation of the region

$$g_1 = \frac{4}{3}x, \quad g_2 = -\frac{4}{3}x, \quad g_3 = \frac{7}{2}, \quad f = \sqrt{4 - x^2}$$

## Complex plane: Example 3

Explanations to the region in figure B3-3:

$$M_1: 3 \operatorname{Im}(z) \geq 4 \operatorname{Re}(z), \quad y \geq \frac{4}{3} x$$

$$M_2: 3 \operatorname{Im}(z) \geq -4 \operatorname{Re}(z), \quad y \geq -\frac{4}{3} x$$

$$M_3: |z| \geq 2$$

$$M_4: \operatorname{Im}(z) \leq \frac{7}{2}$$

$$M_5: |\operatorname{Re}(z)| \leq 2$$

$$M = \{ M_1 \cap M_2 \cap M_3 \cap M_4 \cap M_5 \}$$

*Another region: Example 4*



*Fig. B4-1: Another door region*

# Complex plane: Example 4

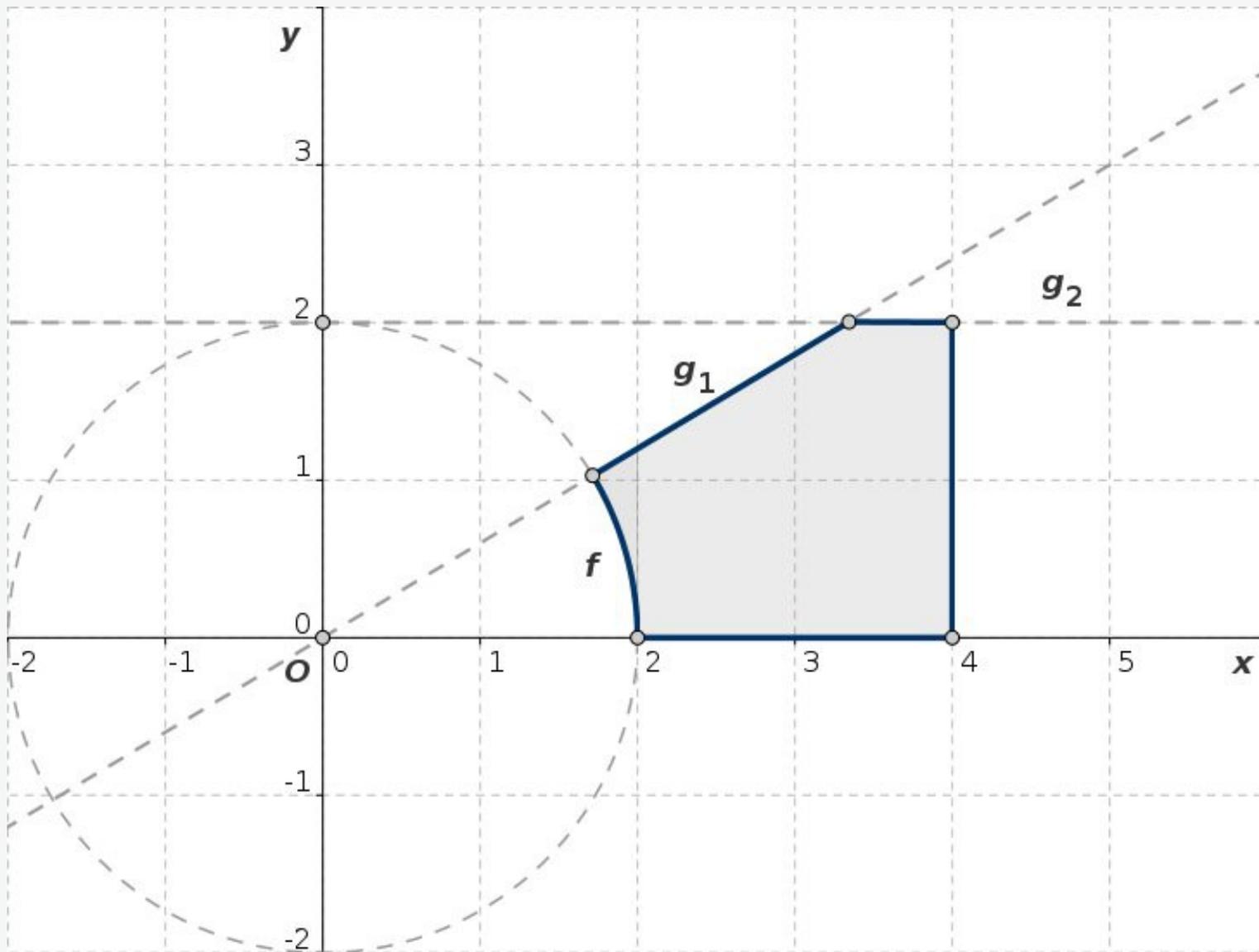


Fig. B4-2: Representation of the region

$$g_1 = \frac{3}{5}x, \quad g_2 = 2, \quad f = \sqrt{4 - x^2}$$

## Complex plane: Example 4

Explanations to the region in figure *B4-2*:

$$M_1: 5 \operatorname{Im}(z) \leq 3 \operatorname{Re}(z), \quad y \leq \frac{3}{5} x$$

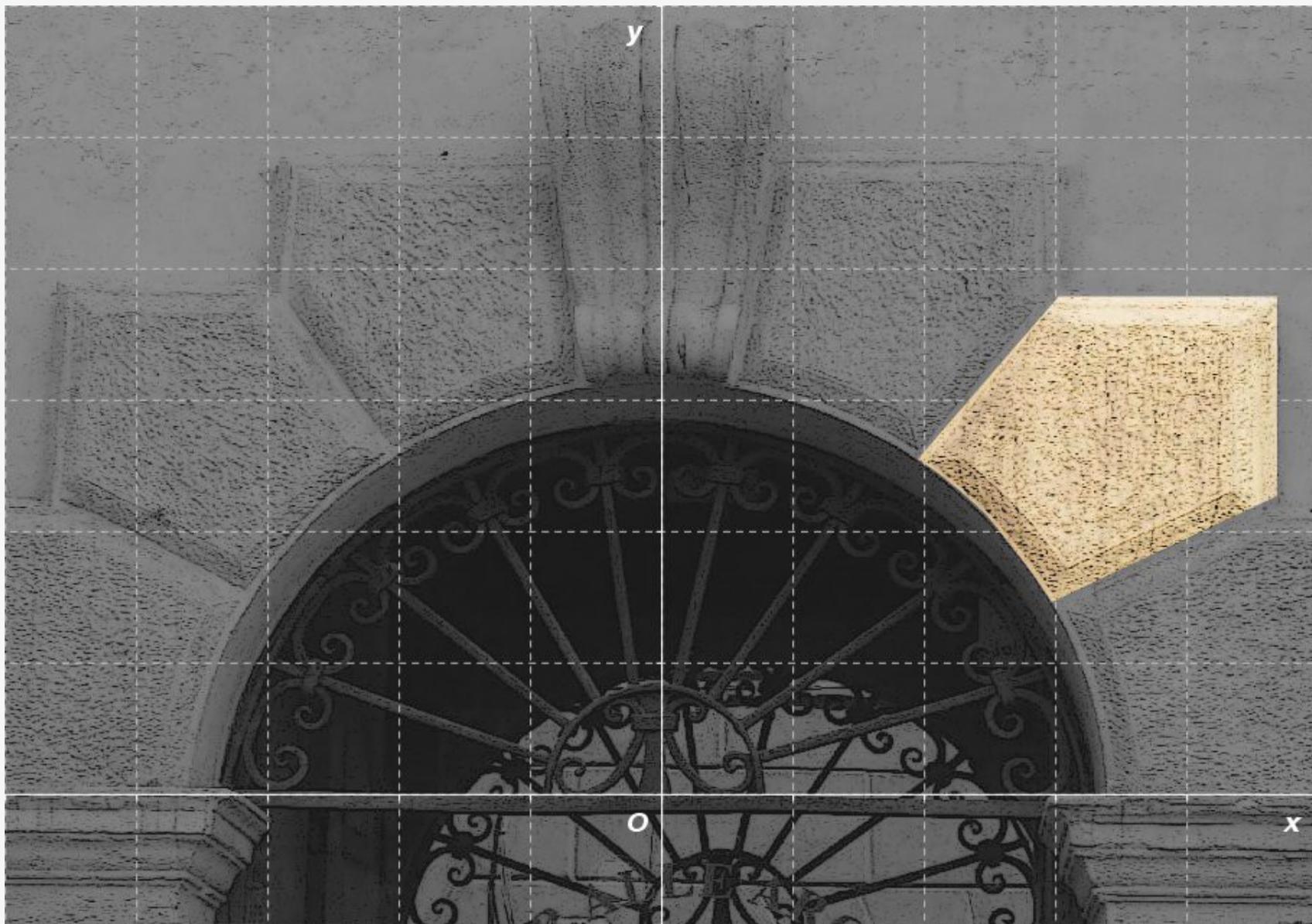
$$M_2: 0 \leq \operatorname{Im}(z) \leq 2, \quad 0 \leq y \leq 2$$

$$M_3: \operatorname{Re}(z) \leq 4, \quad x \leq 4$$

$$M_4: |z| \geq 2$$

$$M = \{ M_1 \cap M_2 \cap M_3 \cap M_4 \}$$

*Another region: Example 5*



*Fig. B5: Another region of the door*