

# A6

## A6 Ungleichungen

Lösen Sie die Ungleichungen und stellen Sie die Lösungsmenge graphisch in einem Koordinatensystem dar.

- a)  $|x| + 2|y| \geq 4$
- b)  $|x - 2| + 2|y + 1| \geq 4$

$$\text{a)} |x| + 2|y| \geq 4$$

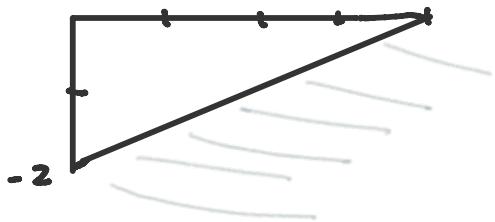
Fall 1:  $x \geq 0, y \geq 0 :$

$$\begin{aligned} x + 2y &\geq 4 \\ 2y &\geq -x + 4 \\ y &\geq -\frac{1}{2}x + 2 \end{aligned}$$



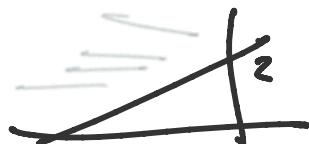
Fall 2:  $x \geq 0, y \leq 0 :$

$$\begin{aligned} x - 2y &\geq 4 \\ -2y &\geq -x + 4 \\ y &\leq \frac{1}{2}x - 2 \end{aligned}$$



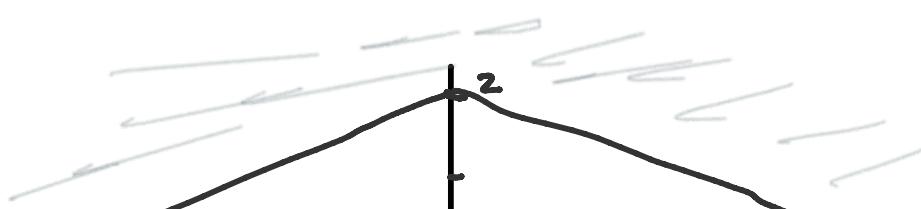
Fall 3:  $x \leq 0, y \geq 0$

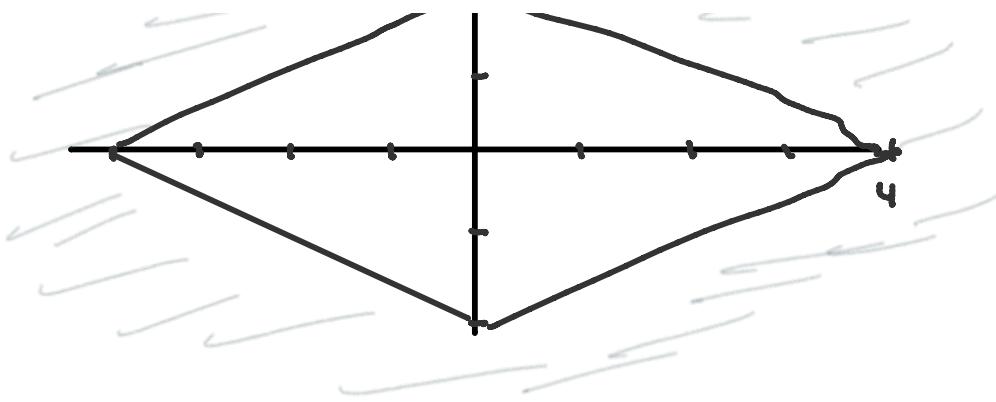
$$\begin{aligned} -x + 2y &\geq 4 \\ 2y &\geq x + 4 \\ y &\geq \frac{1}{2}x + 2 \end{aligned}$$



Fall 4:  $x \leq 0, y \leq 0$

$$\begin{aligned} -x - 2y &\geq 4 \\ -2y &\geq x + 4 \\ y &\leq -\frac{1}{2}x - 2 \end{aligned}$$





$$b) \quad |x-2| + 2|y+1| \geq 4$$

Gegenüber a): Verschiebung um 2 nach rechts und um 1 nach unten.