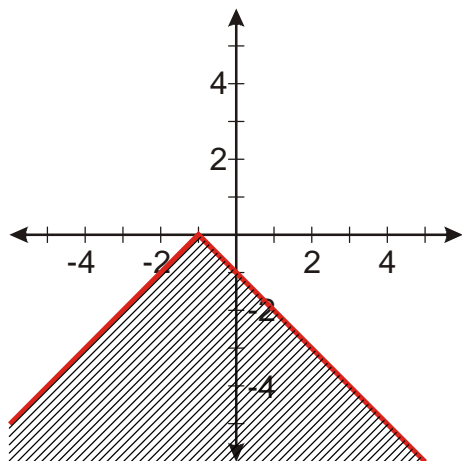


## 2.4.15 Grafy relací s absolutními hodnotami

**Př. 1:** Nakresli graf relace

$$L_1 = \{[x, y] \in \mathbb{R} \times \mathbb{R}; y \leq -|x+1|\}.$$



**Př. 2:** Nakresli graf relace

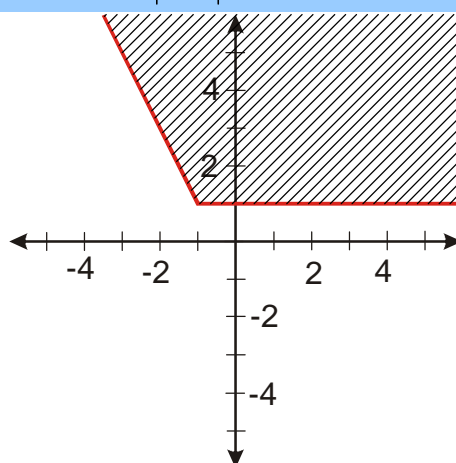
$$L_2 = \{[x, y] \in \mathbb{R} \times \mathbb{R}; y \geq |x+1| - x\}.$$

1)  $x \in (-\infty; -1)$

$$y = |x+1| - x = -x - 1 - x = -2x - 1$$

2)  $x \in (-1; \infty)$

$$y = |x+1| - x = x + 1 - x = 1$$



**Př. 3:** Nakresli graf relace

$$L_3 = \{[x, y] \in \mathbb{R} \times \mathbb{R}; |y| > |x|\}.$$

1)  $y \in (-\infty; 0)$

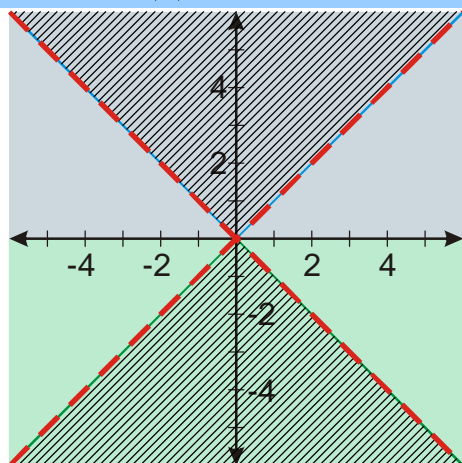
$$y < 0 \Rightarrow |y| = -y$$

$$-y > |x| \Rightarrow y < -|x|$$

2)  $y \in (0; \infty)$

$$y > 0 \Rightarrow |y| = y$$

$$y > |x|$$



**Př. 4:** Nakresli graf relace

$$L_4 = \{[x, y] \in \mathbb{R} \times \mathbb{R}; |x-1| + |y| \geq 4\}.$$

1)  $y \in (-\infty; 0)$

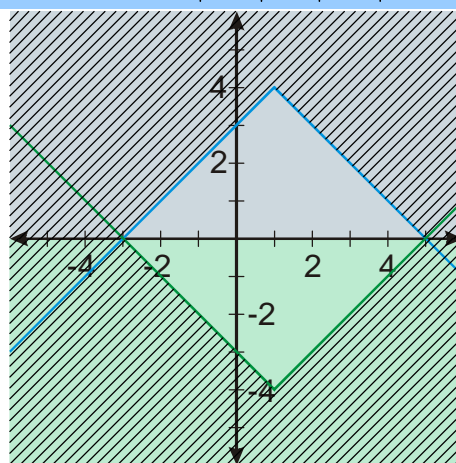
$$y < 0 \Rightarrow |y| = -y$$

$$y \leq |x-1| - 4$$

2)  $y \in (0; \infty)$

$$y > 0 \Rightarrow |y| = y$$

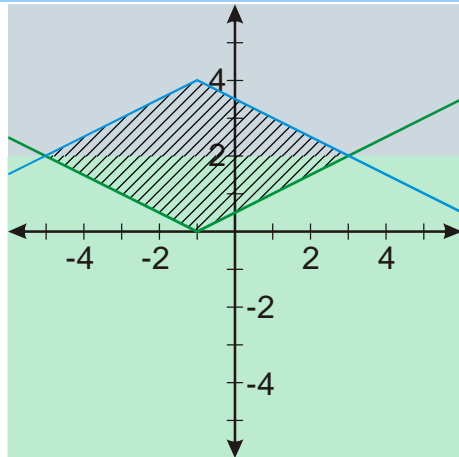
$$y \geq 4 - |x-1| = -|x-1| + 4$$



**Př. 5:** Nakresli graf relace  $L_5 = \{[x, y] \in R \times R; |x+1| + 2|y-2| \leq 4\}$ . Ještě před začátkem řešení odhadni výsledek.

1)  $y \in (-\infty; 2)$   $y-2 < 0 \Rightarrow |y-2| = -y+2$   $y \geq \frac{1}{2}|x+1|$

2)  $y \in \langle 2; \infty)$   $y-2 > 0 \Rightarrow |y-2| = y-2$   $y \leq 4 - \frac{1}{2}|x+1|$



**Př. 6:** Nakresli graf relace  $L_6 = \{[x, y] \in R \times R; |y-1| + y + |x+2| - 2x - 7 \geq 0\}$ .

1)  $x \in (-\infty; -2) \wedge y \in (-\infty; 1)$   $x \leq -\frac{8}{3}$

2)  $x \in (-\infty; -2) \wedge y \in \langle 1; \infty)$   $y \geq \frac{3}{2}x + 5$

3)  $x \in \langle -2; \infty) \wedge y \in (-\infty; 1)$   $x \leq -4$

4)  $x \in \langle -2; \infty) \wedge y \in \langle 1; \infty)$   $y \geq \frac{x}{2} + 3$

