

Ungleichung

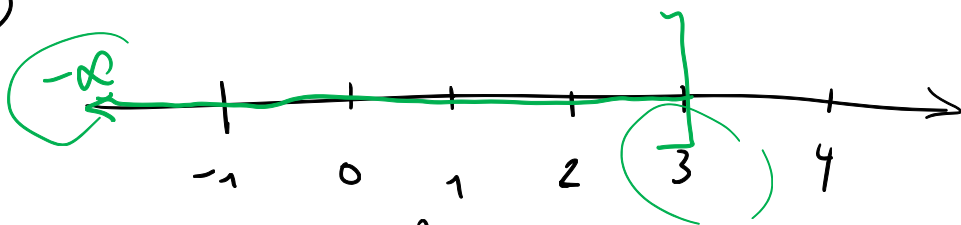
$$\frac{3}{5}x - \frac{1}{4} > 1 - \frac{2}{5}x \quad | +\frac{1}{4}$$

$$\frac{3}{5}x > 1,25 - \frac{2}{5}x \quad | +\frac{2}{5}x$$

$$\underline{x > 1,25} \quad \mathbb{L} = \{x \mid x > 1,25\}$$

$$\mathbb{L} =]1,25; +\infty[$$

②



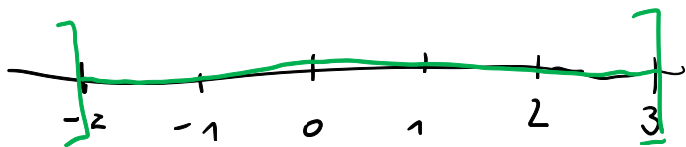
$$\mathbb{L} = \{x \mid x \leq 3\}$$

$$\mathbb{L} =]-\infty; 3]$$

③

$$-2 < x \leq 3 \quad \mathbb{L} = \{x \mid -2 < x \leq 3\}$$

$$\mathbb{L} =]-2; 3]$$



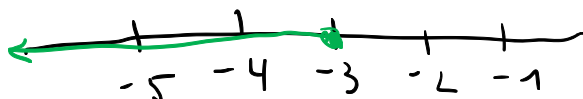
④

$$5x + 1 < 3x - 5 \quad | +5$$

$$5x + 6 < 3x \quad | -5x$$

$$6 < -2x \quad | :(-2)$$

$$-3 > x$$



$$\mathbb{L} = \{x \mid x < -3\}$$

$$\mathbb{L} =]-\infty; -3[$$

5)

Ein Rechteck ist doppelt so lang wie breit. Wie lang und breit

Kann das Rechteck höchstens sein, wenn der Umfang ~~30cm~~ nicht mehr als 30cm sein darf?

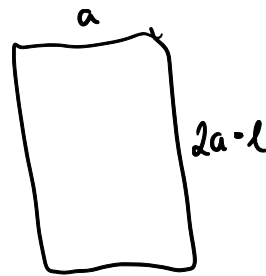
$$U = 2(2a + a)$$

$$= 6a$$

$$U \leq 30\text{cm}$$

$$6a \leq 30\text{cm}$$

$$\underline{\underline{a \leq 5\text{cm}}}$$



6)

$$\frac{x}{5} + 3 \geq \frac{x}{2} \quad | \cdot 5$$

$$x + 15 \geq \frac{5}{2}x \quad | -x$$

$$15 \geq \frac{3}{2}x \quad | : \frac{3}{2}$$

$$\frac{15}{\frac{3}{2}} \geq x$$

$$x \leq \frac{15 \cdot 2}{3} \Rightarrow x \leq 10$$

7)

$$2x + \frac{5}{2} < -(3 + 4x) - 3$$

$$2x + \frac{5}{2} < (-1)(3 + 4x) - 3$$

$$2x + \frac{5}{2} < -3 - 4x - 3$$

$$2x + \frac{5}{2} < -6 - 4x \quad | +4x$$

$$6x + \frac{5}{2} < -6 \quad | -\frac{5}{2}$$

$$6x < -8\frac{1}{2}$$

$$6x < -\frac{17}{2} \quad | :6$$

$$x < -\frac{17}{2 \cdot 6} \quad x < -\frac{17}{12}$$

$$\frac{17}{2} \cdot \frac{1}{6} = \frac{17}{12}$$

⑧

$$\frac{3-2x}{5x+2} \leq 1$$

Bestimme die Def.menge
und die Lösungsmenge!

$$\mathbb{D} = \{\mathbb{R} \setminus -\frac{2}{5}\}$$

$$5x+2=0 \quad 5x=-2 \quad x=-\frac{2}{5}$$

$$3-2x \leq 5x+2 \quad | -2$$

$$1-2x \leq 5x \quad | +2x$$

$$1 \leq 7x \quad | :7$$

$$x \geq \frac{1}{7}$$

$$\mathbb{L} = \{x \in \mathbb{R} \setminus -\frac{2}{5} \mid x \geq \frac{1}{7}\}$$

⑨

$$\frac{3-x}{2-x} \geq \frac{x+4}{2(2-x)}$$

$$\mathbb{D} = \{\mathbb{R} \setminus 2\}$$

$$2(2-x) \neq 0$$

$$4-2x=0 \quad | +2x$$

$$4=2x \quad | :2$$

$$x=2$$

$$\frac{3-x}{2-x} \geq \frac{x+4}{2(2-x)} \quad | \cdot (2-x)$$

$$3-x \geq \frac{(x+4)(\cancel{2-x})}{2(\cancel{2-x})}$$

$$\rightarrow 3-x \geq \frac{x+4}{2} \quad | \cdot 2$$

$$6-2x \geq x+4 \quad | -4$$

$$2-2x \geq x \quad | +2x$$

$$2 \geq 3x \quad | :3$$

$$\frac{2}{3} \geq x$$

$$\mathbb{L} = \{x \in \mathbb{R} \setminus 2 \mid x \leq \frac{2}{3}\}$$

$$\cancel{2-x} = 2-x$$

$$\frac{3-x}{\cancel{2-x}} \geq \frac{x+4}{2 \cdot \cancel{2-x}} \quad | \cdot \cancel{2-x}$$

$$\frac{3-x}{\cancel{2-x}} \cdot \cancel{2-x} \geq \frac{x+4}{2 \cdot \cancel{2-x}} \cdot \cancel{2-x}$$

$$\frac{(3-x) \cdot \cancel{2-x}}{\cancel{2-x}} \geq \frac{(x+4) \cdot \cancel{2-x}}{2 \cdot \cancel{2-x}}$$

$$3-x \geq \frac{x+4}{2}$$