

$$\heartsuit = \{ (x; y) \in \mathbb{N} \times \mathbb{N} \mid x \geq y \}$$

transitiv. $(x; y) \in \heartsuit \wedge (y; z) \in \heartsuit \Rightarrow (x; z) \in \heartsuit$

$$x \geq y \wedge y \geq z \hat{=} x \geq y \geq z \Rightarrow x \geq z \quad \left. \begin{array}{l} \uparrow \\ \downarrow \end{array} \right\}$$

reflexiv. $(x; x) \in \heartsuit ; x \in \mathbb{N} \quad x \geq x \quad \checkmark$

antisym. $(x; y) \in \heartsuit \wedge (y; x) \in \heartsuit \Rightarrow x = y$

$$x \geq y \wedge y \geq x \quad \longrightarrow$$

$x > y$: irreflexiv $(x; x) \notin \heartsuit$

asym. $(x; y) \in \heartsuit \Rightarrow (y; x) \notin \heartsuit$

$$S 28 \text{ Nr. 2} \quad A = \{ \dots - 10; -5; 0; 5; 10; \dots \}$$

$$B = \{ -10; -9; -8 \dots ; 8; 9; 10 \}$$

$$a) A \cap B = \{ \pm 10; \pm 5; 0 \}$$

$$= \{ x \in [-10; 10]_{\mathbb{Z}} \mid x \bmod 5 = 0 \}$$

$$b) A \cup B = \{ \dots -20; -15; -10, -9; \dots ; 9; 10; 15; 20 \dots \}$$

$$= \{ x \in \mathbb{Z} \mid x \bmod 5 = 0 \vee (x \geq -10 \wedge x < 10) \}$$

$$-9 \leq v \leq 9$$

$$c) A \setminus B = \{ \dots -20; -15; 15; 20 \dots \} \quad \rightarrow x \geq 15 \vee x \leq -15$$

$$= \{ x \in \mathbb{Z} \mid x \bmod 5 = 0 \wedge |x| \geq 15 \}$$

$$d) B \setminus A = x \in [-9, 9]_{\mathbb{Z}} \setminus \{ \pm 5; 0 \}$$

S 32 | A

$$A = \{-6; -4; -2; 0; 2; 6; 14; 16; 18; 20; 22; 26\}$$

$$B = \{-10; -8; -4; 0; 4; 8; 10; 12; 16; 20; 24; 28; 30; 32\}$$

$$a) A \cap B = \{-4; 0; 16; 20\}$$

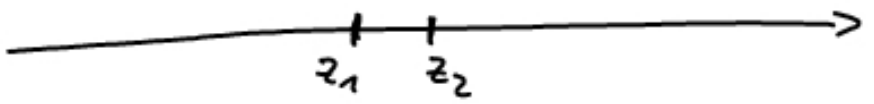
$$b) A \cup B = \{x \in [-10; 32]_{\mathbb{Z}} \mid x \bmod 2 = 0\}$$

$$c) A \setminus B = \{-6; -2; 2; 6; 14; 18; 22; 26\}$$

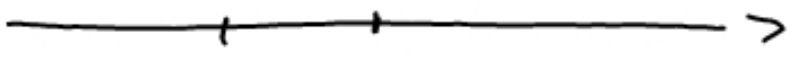
$$= \{x \in [-6; 26]_{\mathbb{Z}} \setminus \{10\} \mid x \bmod 2 = 0 \wedge x \bmod 4 \neq 0\}$$

$$d) B \setminus A = \{x \in [-10; 32]_{\mathbb{Z}} \setminus \{-4; 0; 16; 20\} \mid x \bmod 4 = 0 \vee x \bmod 10 = 0\}$$

\mathbb{Z}



\mathbb{Q}



$$0,\overline{35} = \frac{35}{99}$$

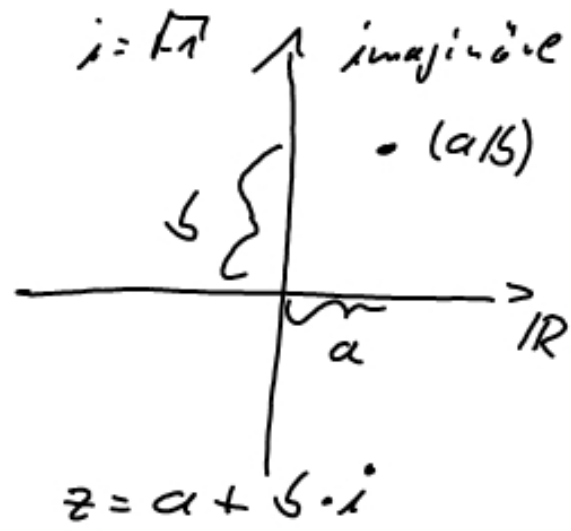
$$0,1\overline{07} = \frac{1}{10} \cdot \frac{7}{9} = \frac{7}{90}$$

\mathbb{R}



$i = \sqrt{-1}$ imaginäre
 • (a/b)

\mathbb{C}



$$\text{neutral } (*) = 1$$

$$\text{neutral } (+) = 0$$

$$2 \cdot x + 5 = 13 \quad | -5$$

$$2 \cdot x + (5 - 5) = 13 - 5$$

$$2 \cdot x + 0 = 8 \quad | \cdot 1/2$$

$$(1/2 \cdot 2) \cdot x + 0 = 1/2 \cdot 8$$

$$1 \cdot x + 0 = 4$$

$$x = 4$$