2011 - 1: $A = \{1; 2; 3; 4; 6; 8; 10; 12\}$

$B = \{x \in \mathbb{N}^{\leq 13} \mid x \bmod 2 \neq 0\}$

$= \{1; 3; 5; 7; 9; 11; 13\}$

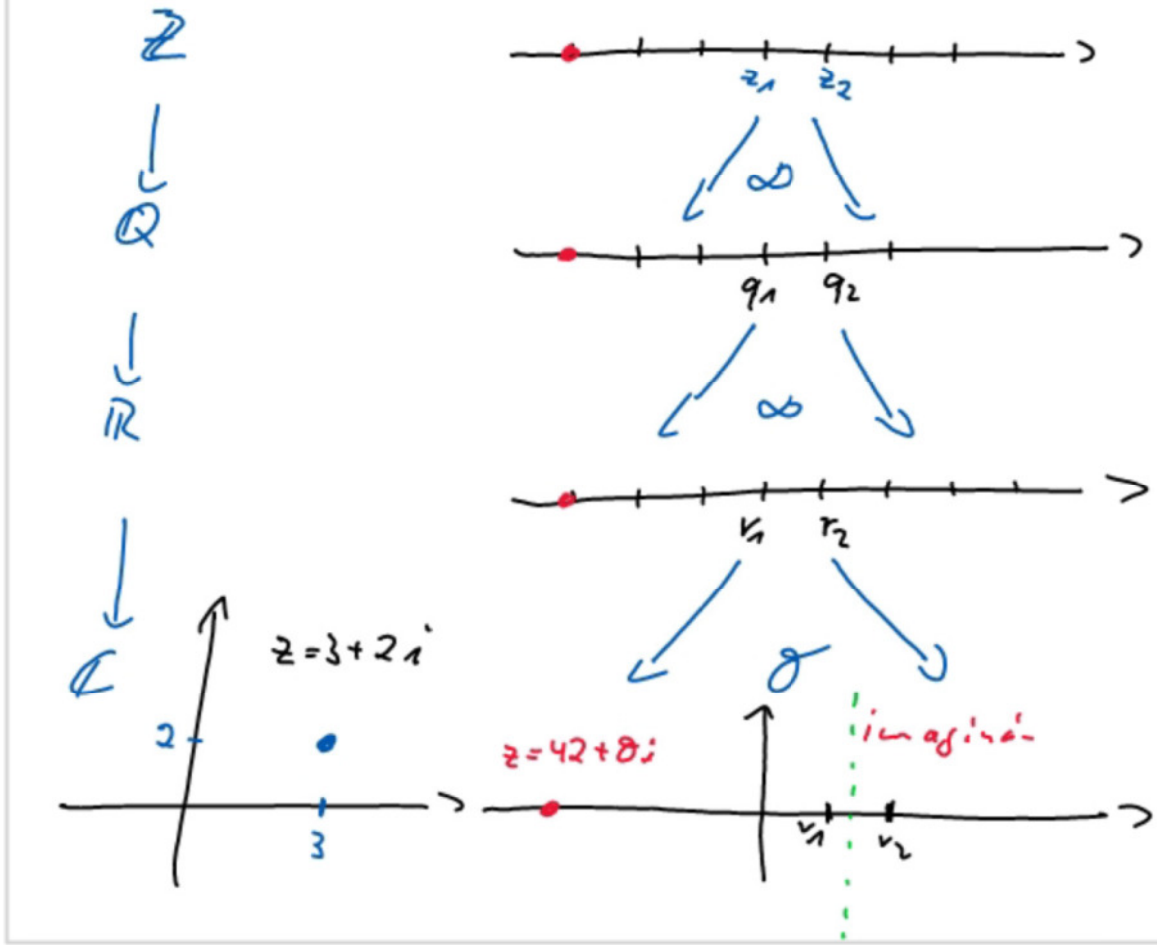
a) $A \cap B = \{1; 3\} = \{x \in \mathbb{N}^{\leq 3} \mid x \bmod 2 \neq 0\}$

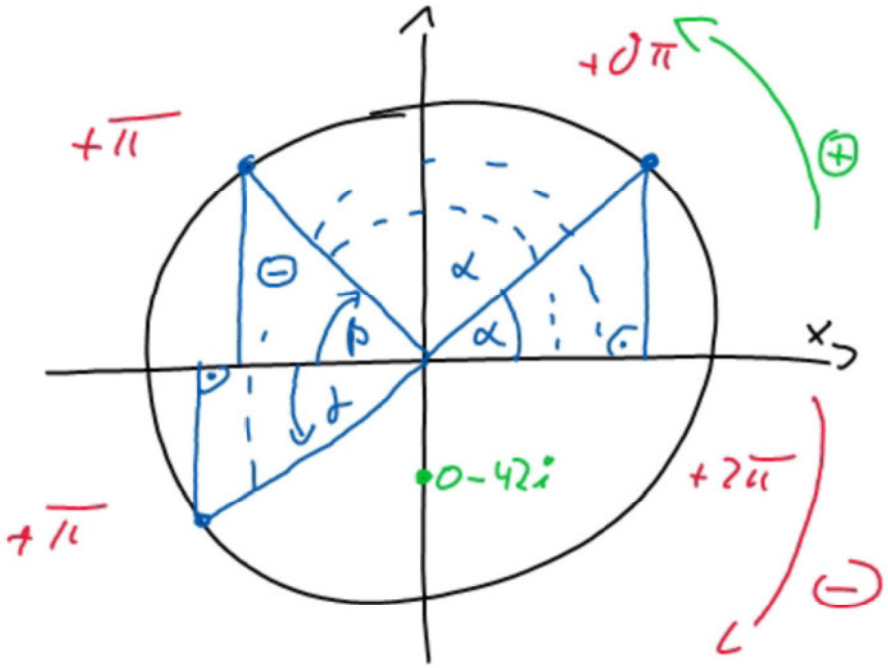
b) $A \cup B = x \in [1; 13]_{\mathbb{N}}$

c) $A \setminus B = \{x \in [2; 12]_{\mathbb{N}} \mid x \bmod 2 = 0\}$

d) $B \setminus A = \{x \in [5; 13]_{\mathbb{N}} \mid x \bmod 2 \neq 0\}$

$\frac{1}{x-3}$; $\mathbb{D} = \{x \in \mathbb{R} \setminus \{3\}\}$


ℤ
ℚ
ℝ
ℂ
z_1 z_2
q_1 q_2
r_1 r_2
$z = 3 + 2i$
2
3
$z = 42 + 8i$
imaginär
r_1 r_2



$z = -4 + 21i$

$(-4 \mid 21)_{+\pi}$

$\alpha = \arctan b/a$

$\alpha = \arctan \frac{21}{-4} + \pi$

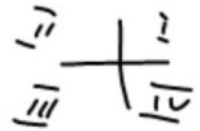
$(2 - 3i) - 2 \cdot (5 + 2i) \cdot 2 - 3i - 10 - 4i$

$= -8 - 7i$

$r = \sqrt{8^2 + 7^2} = \sqrt{123}$

$\alpha = \arctan(7/8) + \pi$

$z = a + bi$, $i = \sqrt{-1}$



$(2i - 4) \cdot (2 + i) - 3i \cdot (2i - 7)$

$4i + 2i^2 - 8 - 4i - 6i^2 + 21i$

$4i + 2 \cdot (-1) - 8 - 4i - 6 \cdot (-1) + 21i = -4 + 21i$

2) $3 \cdot (2i + 1) \cdot 2 \cdot (4 - 3i) - 2 \cdot (3i - 2)(-1 - 5i)$

$6 \quad (8i - 6i^2 + 4 - 3i) \quad - 2 \quad (-3i - 15i^2 + 2 + 10i)$

$6 \cdot (10 + 5i) \quad - 2 \cdot (17 + 7i)$

$60 + 30i \quad - 34 - 14i \quad = 26 + 16i$

$r = \sqrt{26^2 + 16^2}$

$\alpha = \arctan \frac{16}{26}$ } $(r; \alpha)$ $\qquad (26 \mid 16)$

$(2i-3)^5$

$(2i-3):(i+2) = \frac{2i-3}{i+2}$

" $(i+2)^2 = i^2 + 2 \cdot i \cdot 2 + 2^2 = 3 + 4i$

$(a+5)(a-5) = a^2 - 5^2$

$\frac{(2i-3)}{i+2} \cdot \frac{(i-2)}{i-2} = \frac{2i^2 - 4i - 3i + 6}{i^2 - 4}$

$= \frac{4 - 7i}{-5} = -\frac{4}{5} + \frac{7}{5}i = 0{,}8 + 1{,}4i$

$\frac{5+2i}{i-3} \cdot \frac{i+3}{i+3} = \frac{5i + 15 + 2i^2 + 6i}{i^2 - 9}$

$(a-5) \quad (a+5) \quad a^2 - 5^2$

$= \frac{13 + 11i}{-10} = -1{,}3 - 1{,}1i$ + "

$\frac{2\sqrt{x}}{3\sqrt{x} - 4}$

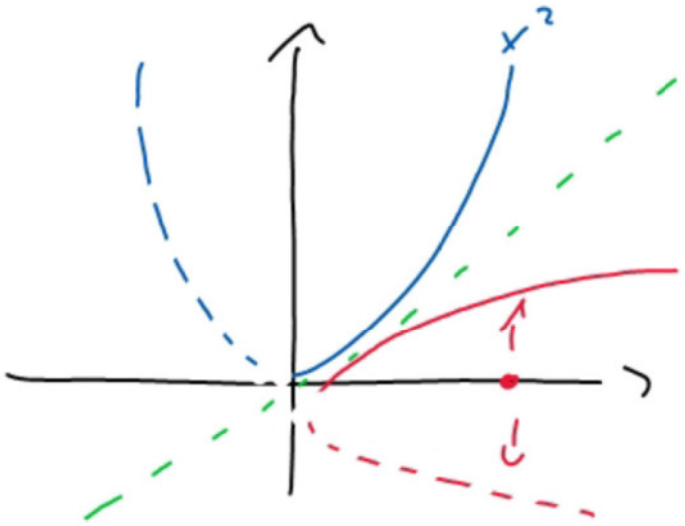
$(a - 5)$

$3\sqrt{x} + 4$

$(a + 5)$

$(3\sqrt{x})^2 - 4^2 = 9x - 16$

$a^2 - 5^2$



$$A = \{(x;y) \in \mathbb{R} \times \mathbb{R} \mid y = x^2\}$$

$$A^* = \{(x;y) \in \mathbb{R}_0^+ \times \mathbb{R}_0^+ \mid y = x^2\}$$

$x^2 = 4 \quad | \sqrt{\ }$

$x = \pm\sqrt{4} = \pm 2$

$\sqrt{3+x} = 42$

$x^2 = 4$

$x = +\sqrt{4}$

+	•
$- : +(-\ldots)$	$: : \cdot \frac{1}{\ }$
$5 - x$	$5 : x = 5 \cdot \frac{1}{x}$
$5 + (-x)$	