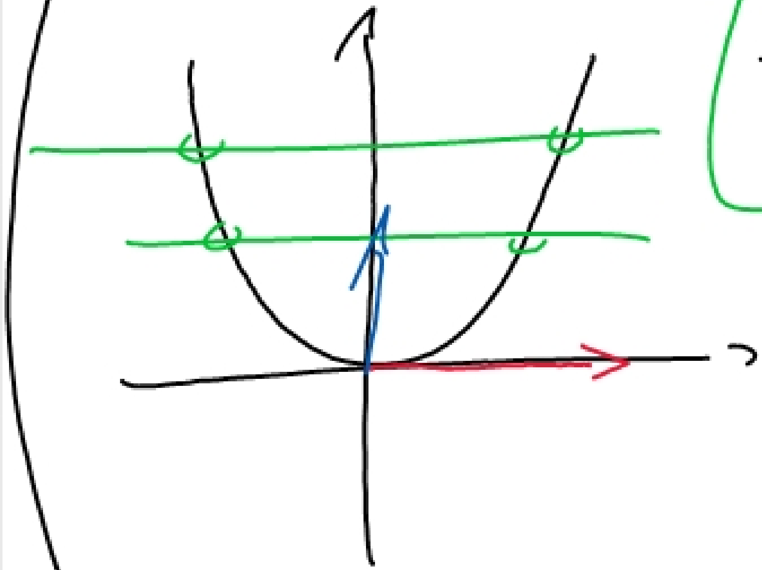
$\# = \{(x;y) \in \mathbb{R} \times \mathbb{R} \mid y = x^2\}$



=> bijektiv

→ $\mathbb{D}$; $\mathbb{W}$;

Parallel zu
x-Achse
1 Schnittpunkt
↓
injektiv

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

Absorptionsgesetz: $A \cap (A \cup B) = A$

Distributiv $(A \cap A) \cup (A \cap B)$

neutral $A \cup (A \cap B)$

Distributiv $(A \cup A) \cap (A \cup B)$

neutral $A \cap (A \cup B)$

neutrale Erweiterung:

$(A \cup \{\}) \cap (A \cup B)$

distributiv:

$A \cup (\{\} \cap B)$

idempotent $A \cup \{\}$

neutral A

S. 36 Nr. 3

$$\overline{\overline{A \cup B} \cup \overline{A \cup \overline{B}}}$$

de Morgan

$$\overline{\overline{A \cup B}} \cap \overline{\overline{A \cup \overline{B}}}$$

doppelte Negation

$$(A \cup B) \cap (A \cup \overline{B})$$

distributiv

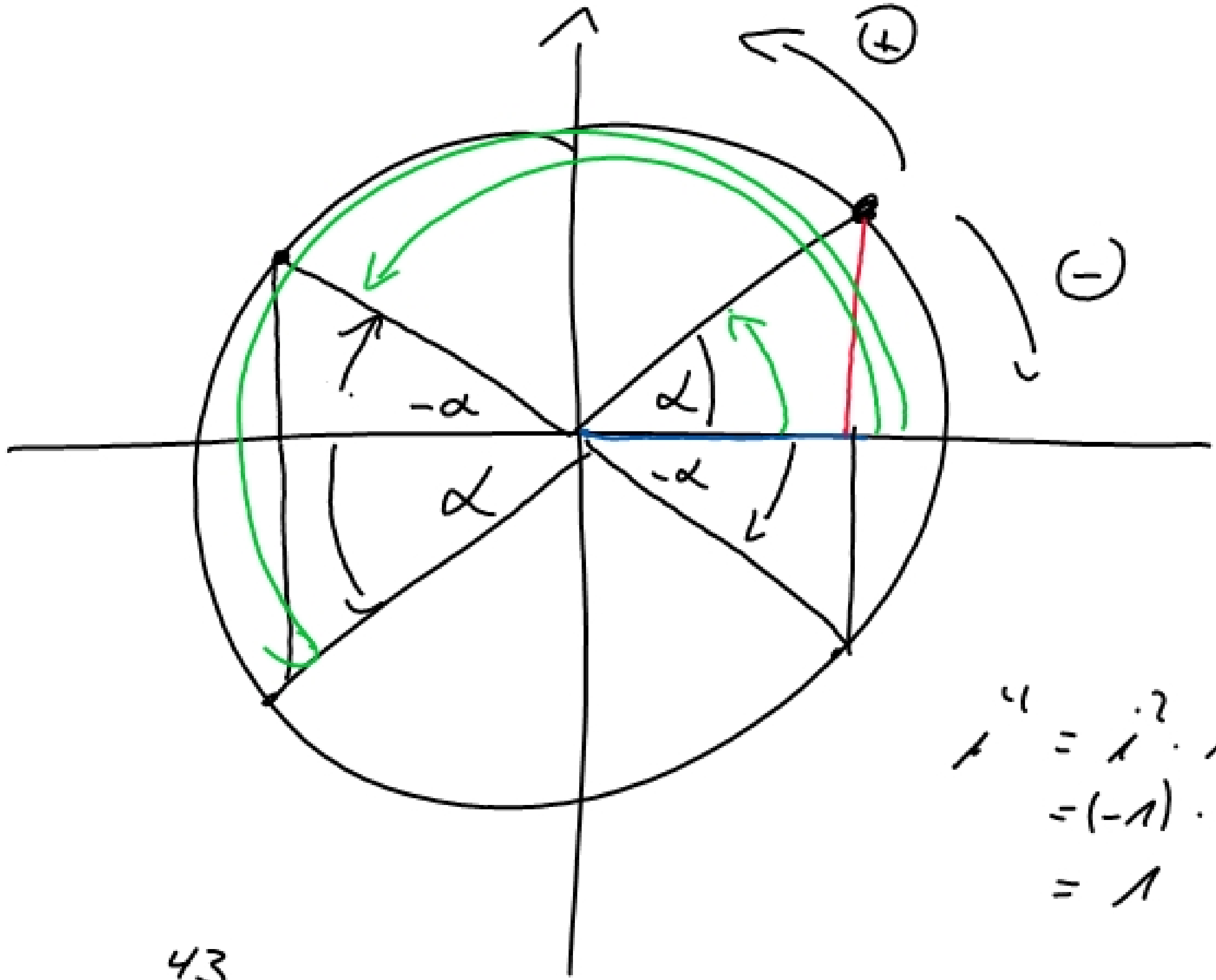
$$A \cup (B \cap \overline{B})$$

Komplement

$$A \cup \{\}$$

neutral

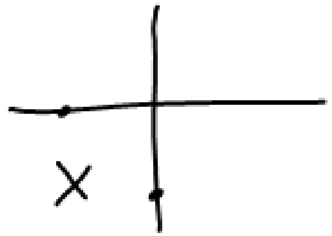
$$A$$



$$i^4 = i^2 \cdot i^2$$
$$= (-1) \cdot (-1)$$
$$= 1$$

$$i^{43} \Rightarrow 43 \bmod 4 = 3 \qquad i^3 = i^2 \cdot i = (-1) \cdot i$$
$$= -i$$

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



$6i^2-15i+(12i^2+4i-6i-2)$

$-6-15i+(-12-\overbrace{2i}-2)$

$z=-20-17i$

$r=\sqrt{20^2+17^2}$ $\qquad \alpha=\arctan\frac{-17}{-20}+\pi$

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

$8i-12i^2-i\cdot[15i-10+6i^2-4i]$

$8i+12-i\cdot(11i-16)$

$8i+12-11i^2+16i$

$z=23+24i$

$r=\sqrt{23^2+24^2}$ $\qquad \alpha=\arctan\frac{24}{23}+0\pi$

$$(3i-1)^2 = (3i)^2 - 2\cdot 3i\cdot 1 + 1^2$$
$$= -9 - 6i + 1 = -8 - 6i$$

$$(2+5i) : (1-2i) = \frac{2+5i}{\underbrace{1-2i}_{a-b}} \cdot \frac{1+2i}{\underbrace{1+2i}_{a+b}}$$

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

$$\Rightarrow \frac{(2+5i)(1+2i)}{1^2-(2i)^2} = \frac{2+4i+5i+10i^2}{1-(-4)}$$

$$= \frac{-8+9i}{5} = -\frac{8}{5} + \frac{9}{5}i$$

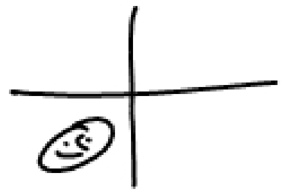
$$\alpha = \arctan -\frac{9}{8} + \pi$$

$$\frac{4-3i}{3+i} - \frac{2i+3}{2i+1}$$

$$\frac{4-3i}{3+i} \cdot \frac{3-i}{3-i} = \frac{12-4i-9i+3i^2}{3^2-(i^2)} = \frac{9-13i}{10}$$

$$\frac{2i+3}{2i+1} \cdot \frac{2i-1}{2i-1} = \frac{4i^2-2i+6i-3}{4i^2-1} = \frac{-7+4i}{-5}$$

$$\frac{9-13i}{10} \pm \frac{-7+4i}{-5} = \frac{9-13i-14+8i}{10}$$



$$\frac{-5-5i}{10} = -\frac{1}{2} - \frac{1}{2}i$$

$$\alpha = \arctan(1) + \pi$$