$(\mathbb{N}, \cdot) \to$ JESTE GRUPOID

1, ASOCIJATIVNOST ✓

2, (L) N.E. $1 \in \mathbb{N} \quad 1 \cdot x = x$

~~3,~~ (L) I.E. $2 \cdot \frac{1}{2} = 1$

$\notin \mathbb{N}$

$(\mathbb{N}, \cdot) \to$ NIJE GRUPA

} POLUGRUPA = ASOCIJATIVAN GRUPOID

$(\mathbb{R}, \cdot) \to$ JESTE GRUPOID

1, ASOCIJATIVNOST ✓

2, (L) N.E. $1 \in \mathbb{R}, \quad 1 \cdot x = x, \quad \forall x \in \mathbb{R}$

~~3,~~ (L). I.E. $0 \cdot \boxed{:(} = 1$

$(\mathbb{R}, \cdot) \to$ NIJE GRUPA

$(\mathbb{R} \setminus \{0\}, \cdot)$

1, ZATVORENOST ✓ $\to$ GRUPOID

2, ASOCIJATIVNOST ✓

3, (L) N.E $1 \in \mathbb{R} \setminus \{0\} \quad 1 \cdot x = x \quad \forall x \in \mathbb{R} \setminus \{0\}$

4, (L) I.E. $x \cdot \boxed{\frac{1}{x}} = 1 \quad \forall x \in \mathbb{R} \setminus \{0\}$

$\Rightarrow (\mathbb{R} \setminus \{0\}, \cdot) \to$ GRUPA

5, KOMUTATIVNOST ✓

$\Rightarrow (\mathbb{R} \setminus \{0\}, \cdot) \to$ ABELOVA GRUPA

① a) $(\mathbb{N}, \cdot)$, b) $(\mathbb{Z}, +)$, c) $(\mathbb{Z}, -)$, d) $(\mathbb{R} \setminus \{0\}, :)$, e) $(\{-2, 0, 2\}, +)$, f) $(\mathbb{R}, :)$

$\frac{1}{0} \notin \mathbb{R}$

1. GRUPOIDI SU: a), b), c), d)

2. ASOCIJATIVNI GRUPOIDI: a, b,

3. ASOCIJATIVNI GRUPOIDI SA N.E: a, b,

4. GRUPE: b

② ZAOKRUŽI TI GRUPE

$\cancel{(\mathbb{N}, +)}$, $\cancel{([0, \infty), +)}$, $\cancel{((-\infty, 0), \cdot)}$, $\cancel{(\mathbb{Z}, \cdot)}$, $\cancel{(\mathbb{Q}, :)}$

$2 + \boxed{-2} = 0$, $-2 \notin [0, \infty)$

$2 \cdot \boxed{\frac{1}{2}} = 1$, $\frac{1}{2} \notin \mathbb{Z}$

$y > x - 1 \wedge z > y - 1$

$(x,y) \in \rho \wedge (y,z) \in \rho \Rightarrow (x,z) \in \rho$

$\Rightarrow z > x - 1$

$\underline{\underline{z > 1}}$

. . .

$\Rightarrow z > y - 1 > x - 1 - 1 = x - 2$

$\Rightarrow z > x - 2$

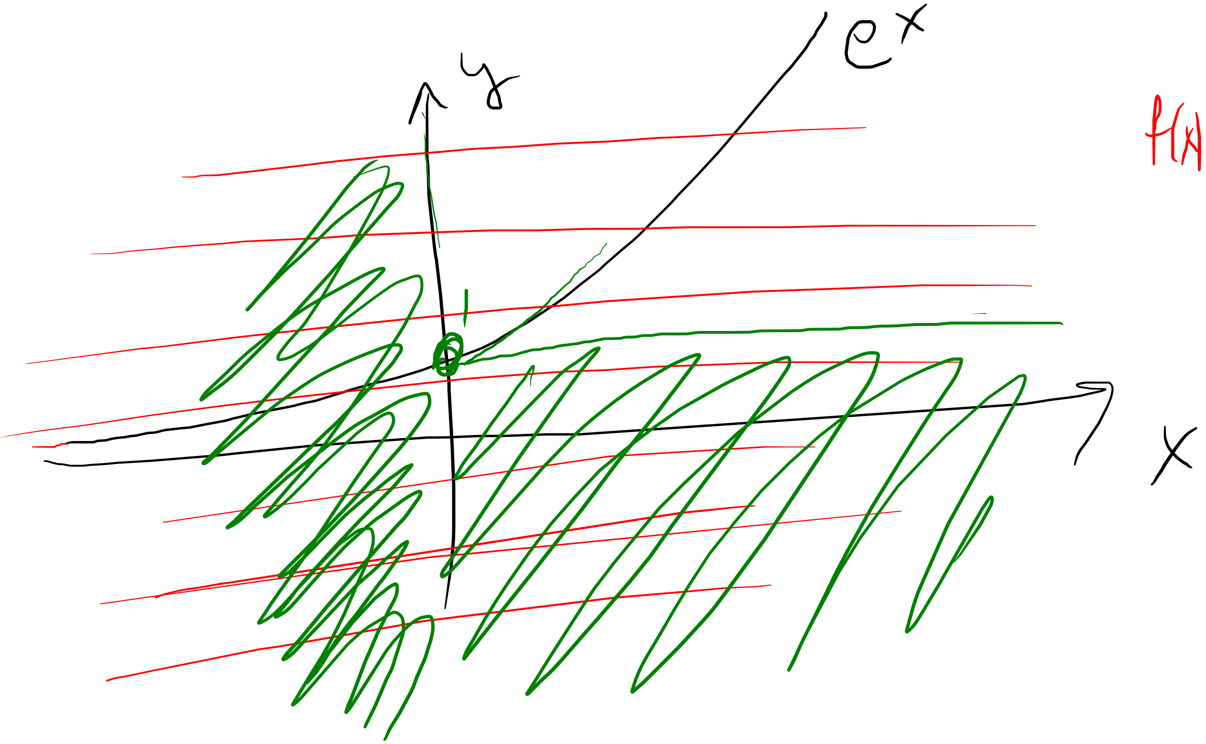
$z > 0$

$x = 2$

$(x,x) \in \rho$

$x > x - 1$

$x = 1 \quad \cancel{x} > 0$

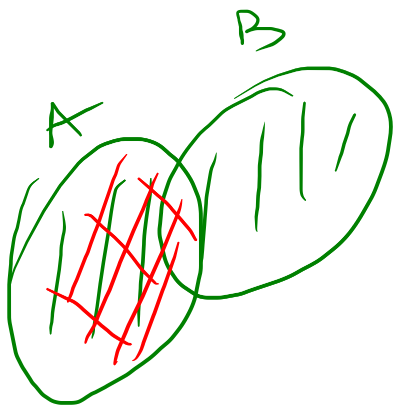


$f(x) = e^x$

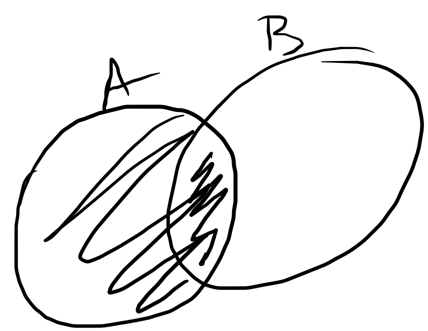
$f: \Theta \to (0,\infty)$

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

$$(a+b)a = a$$

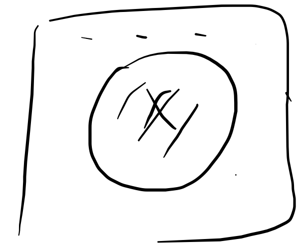


$$(a+b)a = a \cdot a + b \cdot a = a + b \cdot a = a$$



$$xy'(x'+z) = \cancel{x \cdot y' \cdot x'} + xy'z$$

$$= \emptyset + xy'z = xy'z$$



$$xy'x' = \underbrace{xx'}\,y' =$$

$$X \cap \bar{X} = \emptyset$$

$$\emptyset \cap \bar{Y} = \emptyset$$

$$\emptyset \cup \boxed{M} = M$$

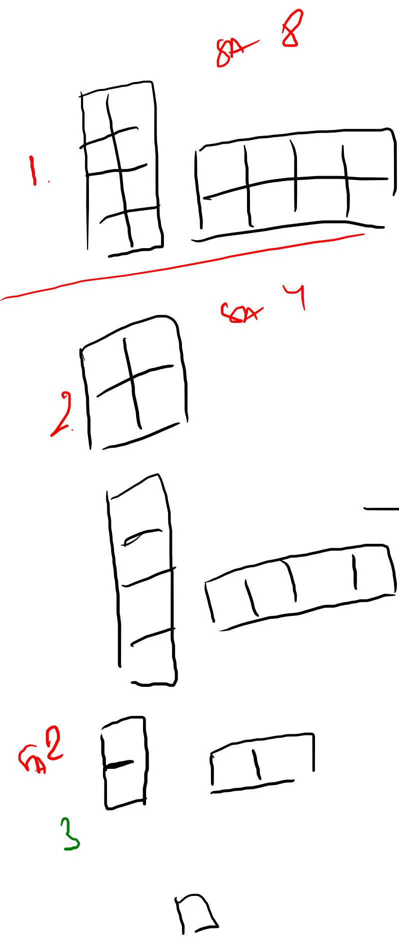
$$(xy'+z)'(xy+z) = (xy')' \cdot z' \cdot (xy+z)$$

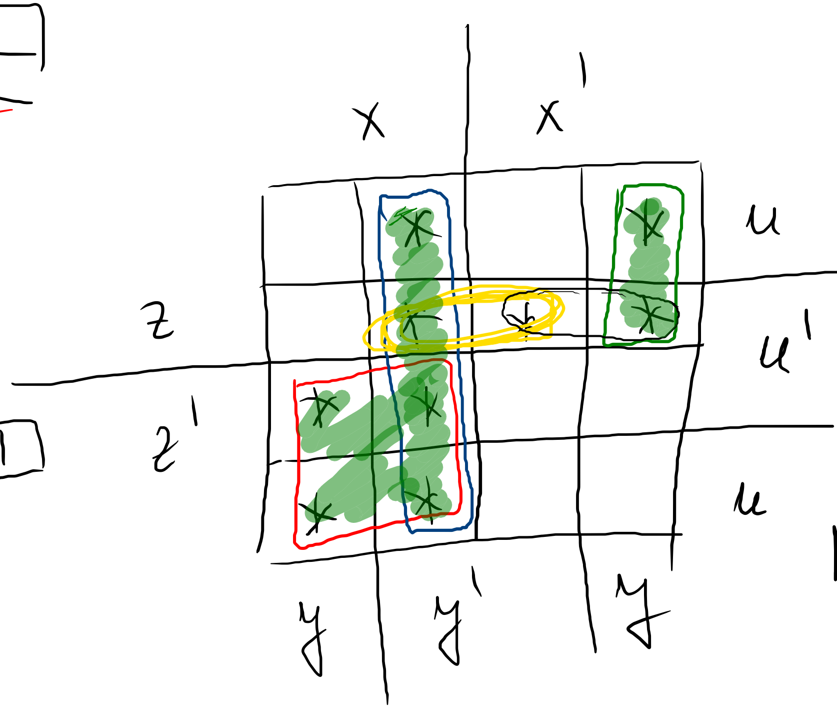
$$= (x'+y)z'(xy+z) = (x'z'+yz')(xy+z)$$

$$= \cancel{x'z'xy}^{\,0} + \cancel{x'z'z}^{\,0} + yz'xy + \cancel{yz'z}^{\,0}$$

$$= xyz'$$

$$f(x,y,z,u) = xyz'u + xyz'u' + xy'zu + xy'zu'$$
$$+ xy'z'u + xy'z'u' + x'y'zu' + x'yzu + x'yzu'$$



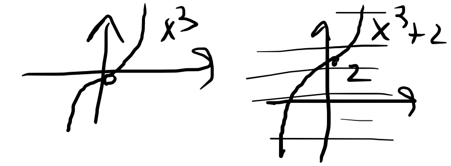


PI: xz', xy', $x'yz$, $y'zu'$, $x'zu'$

$$MDNF_1(f(x,y,z,u)) = xy' + x'yz + xz' + y'zu'$$

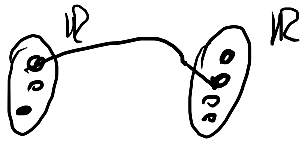
$$MDNF_2(f(x,y,z,u)) = xy' + x'yz + xz' + x'zu'$$

$f(x)=x^3+2$, $f:\mathbb{R}\to\overset{[2,\infty)}{\mathbb{R}}$ ✓



"1-1" $f(x)=f(y) \Rightarrow x^3+\cancel{2}=y^3+\cancel{2} \Rightarrow x^3=y^3 \Rightarrow x=y$ ✓

"ƎNA"



$\forall y\in\mathbb{R}$ ✓ $\exists x\in\mathbb{R},\ f(x)=y$?

$f(x)=y$

$x^3+2=y$

$x^3=y-2$

$x=\sqrt[3]{y-2}$ $\qquad y\in\mathbb{R}$

$g(x)=\sqrt{x^2+1}$, $g:\mathbb{R}\to\overset{[0,\infty)}{\mathbb{R}}$

~~"1-1"~~ $g(x)=g(y) \Rightarrow \sqrt{x^2+1}=\sqrt{y^2+1}\ /^2 \Rightarrow x^2+\cancel{1}=y^2+\cancel{1} \Rightarrow x^2=y^2 \Rightarrow x=y \vee x=-y$

$g(1)=\sqrt{2}=g(-1)$