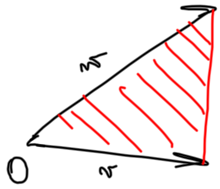
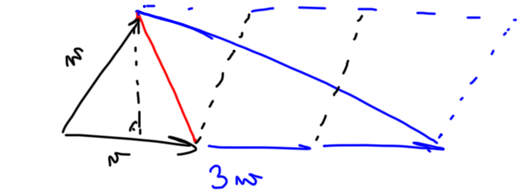
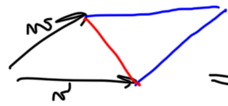


$vol(v, w) = ?$

$vol : V \times V \to \mathbb{R}$

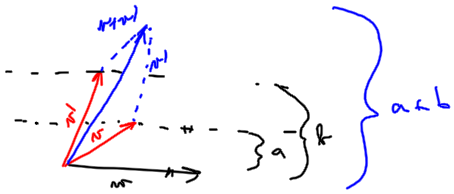
3 12-10:02





obs. rovnobežníka $= 2 \times vol\, \Delta$

3 12-10:05



3 12-10:08

$v = (v_1, v_2)$

$w = (w_1, w_2)$

$$A = \begin{pmatrix} a\cdot v_1 & w_1 \\ a\cdot v_2 & w_2 \end{pmatrix}$$

$$\det A = |A| = a v_1 w_2 - a v_2 w_1$$

$$\begin{vmatrix} v_1 + v_1' & w_1 \\ v_2 + v_2' & w_2 \end{vmatrix} = \underbrace{(v_1 w_2 - v_2 w_1)}_{\det A} + \underbrace{(v_1' w_2 - v_2' w_1)}_{\det A'}$$

$$A' = \begin{vmatrix} v_1' & w_1 \\ v_2' & w_2 \end{vmatrix}$$

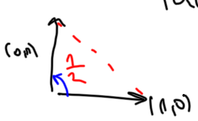
3 12-10:12

$(a, b) = a\cdot(1,0) + b(0,1) = u$

$(c, d) = c\cdot(1,0) + d(0,1) = v$

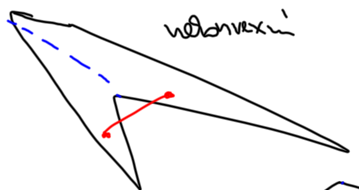
linearita:

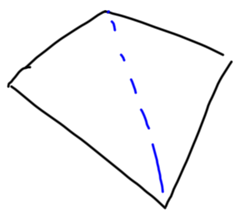
$$vol\,\Delta(u, v) = vol\,\Delta((a,b),(c,d)) =$$
$$= vol\,\Delta(a\cdot(1,0) + b(0,1), c(1,0) + d(0,1)) =$$
$$= (a\cdot c)\, vol\,\Delta((1,0),(1,0)) +$$
$$(a\cdot d)\, vol\,\Delta((1,0),(0,1)) +$$
$$(b\cdot c)\cdot vol\,\Delta((0,1),(1,0)) +$$
$$(b\cdot d)\cdot vol\,\Delta((0,1),(0,1))$$
$$= (ad - bc)\, vol\,\Delta((1,0),(0,1))$$



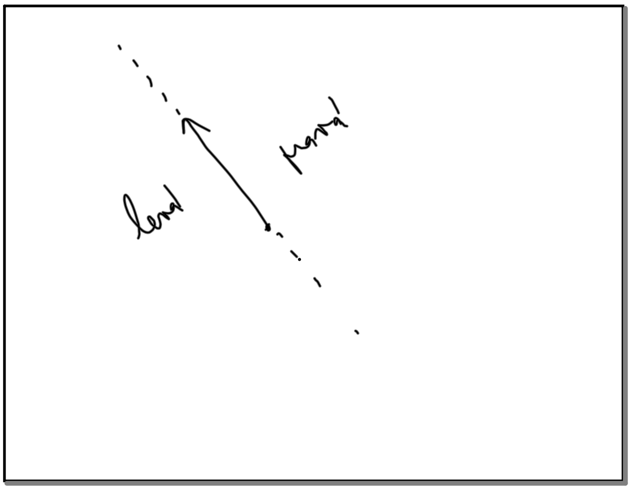
3 12-10:15

nekonvexní

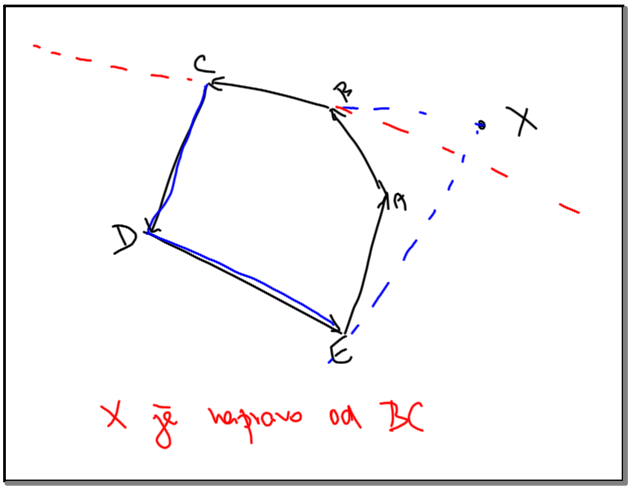




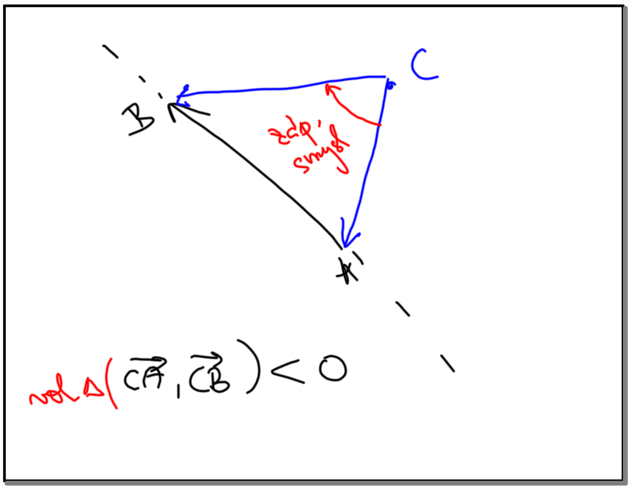
3 12-10:26



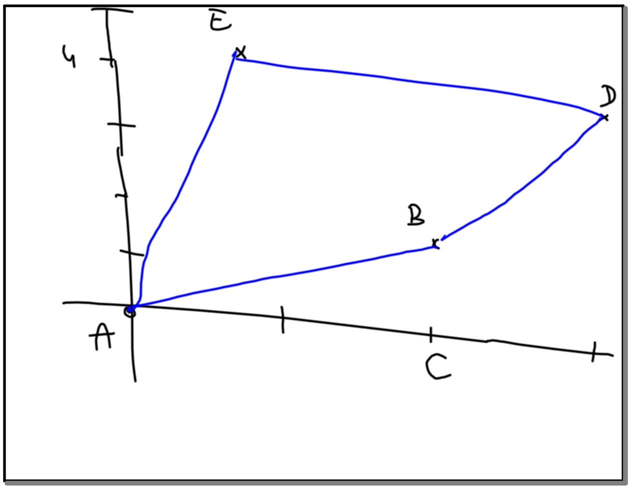
3 12-10:28



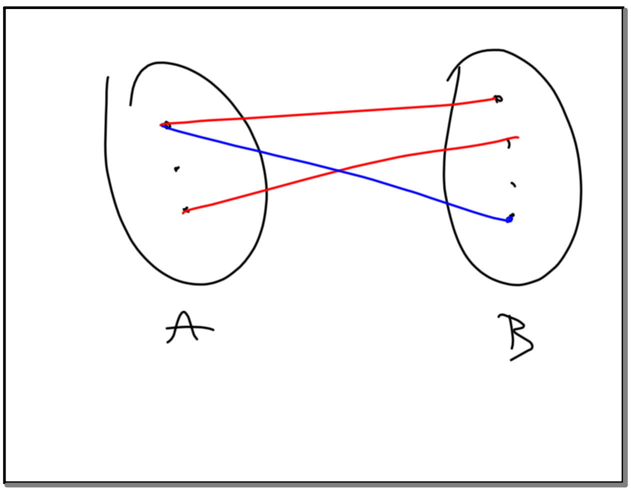
3 12-10:33



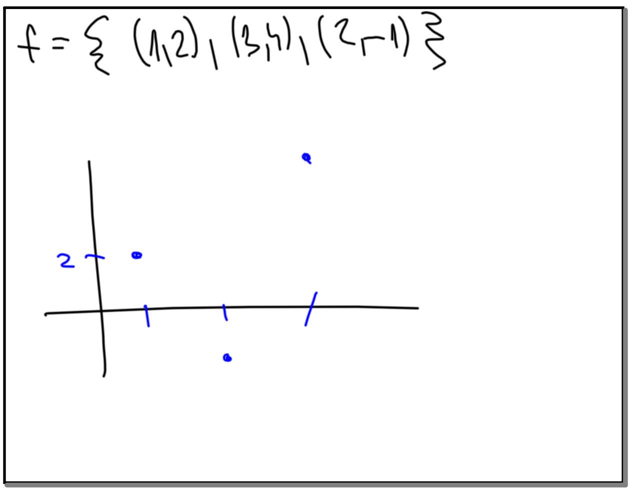
3 12-10:36



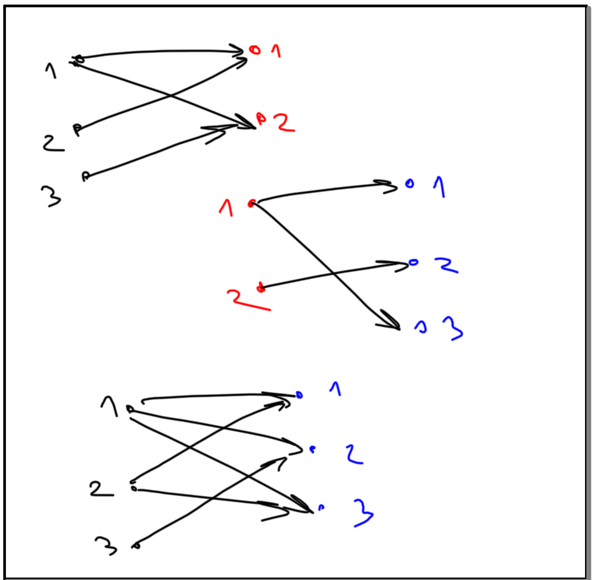
3 12-10:38



3 12-10:46



3 12-10:49

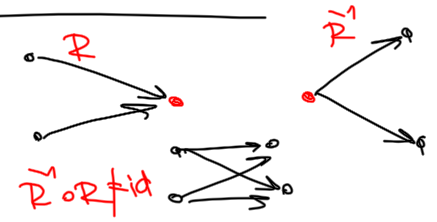


3 12-10:52

$id_A \circ f_A = f_A$

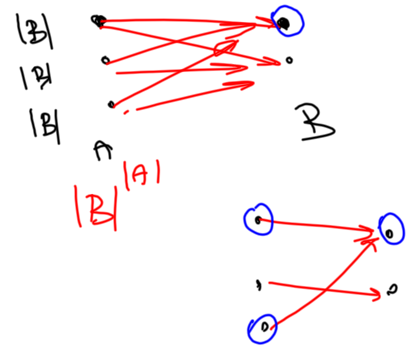
$f_A \circ id_A = f_A$

inverzní relace



3 12-10:54

B^A ... všechna zobrazení (z) A do B



3 12-11:02

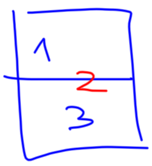
ekvivalence : $A = \{1,2,3\}$

(1) $=_A \; = \{(1,1),(2,2),(3,3)\}$

(2) $A \times A$

(3)

$= \{(1,1),(2,2),(3,3),(2,3),(3,2)\}$



$(1,2) \in R$

$(2,3) \in R$

$(1,3) \notin R$

3 12-11:13

$a + 0 = a$

$a + \bar{b} = \overline{(a+b)}$

$\mathbb{Z}$: $(a,b) \sim (a',b') \Leftrightarrow a + b' = a' + b$

je ekvivalence na $\mathbb{N} \times \mathbb{N}_0$

R: $(a,b) \sim (a,b) \overset{def}{\Leftrightarrow} a+b = a+b$

S: $(a,b) \sim (c,d) \Rightarrow (c,d) \sim (a,b)$

$a + d = c + b \Rightarrow c + b = a + d$

T: $(a,b) \sim (c,d) \wedge (c,d) \sim (e,f) \Rightarrow (a,b) \sim (e,f)$

$a + d = c + b \qquad c + f = e + d \Rightarrow \boxed{a + f = e + b}$

$a + d + c + f = c + b + e + d$

z asoc. a komut. + na $\mathbb{N}$:

$a + f + (c+d) = e + b + (c+d)$

z zákona o odečítání $a + f = e + b$

$[a + m = b + m \Rightarrow a = b]$

3 12-11:20

$\mathbb{N} \times \mathbb{N} \longrightarrow \mathbb{Z}$

$[(a, b)] + [(c, d)] = [(a + c, b + d)]$,

"$a-b$" + "$c-d$" = "$(a+c) - (b+d)$"

zbytkové třídy:

$\equiv_m$ (kongruence modulo m)

$a \equiv b \pmod{m}$

a, b dávají týž zbytek při dělení m

3 12-11:31