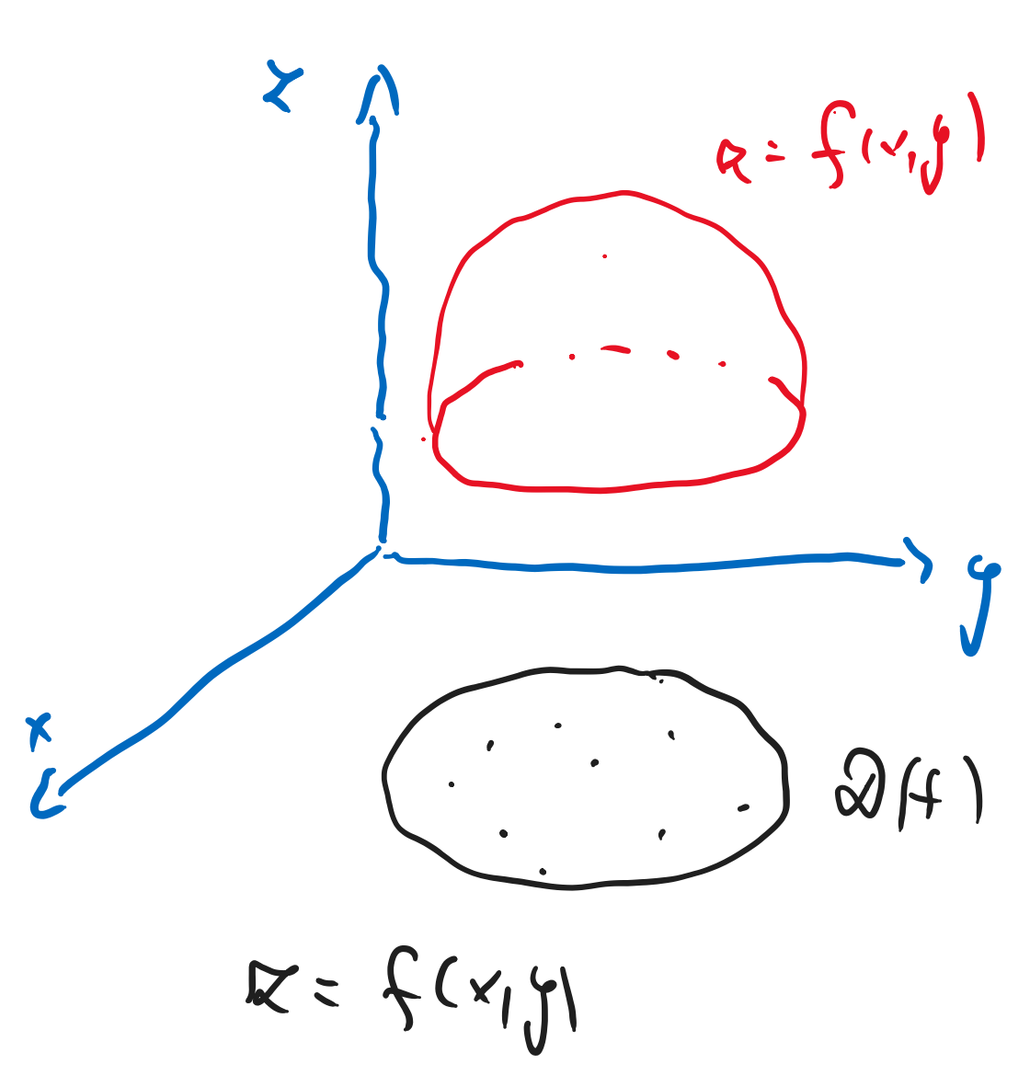
F 2 P

$\int_1^\infty f(x)dx$, VOŠH —> 12.týž

F1P $y = f(x)$

↳ d.j $z = f(x,y)$

Def. Nech $M = \mathcal{D}(f) \subset R^2$. Pravidlo, ktoré $\forall (x,y) \in \mathcal{D}(f)$ priradí práve jednu (reálnu) hodnotu nazývame F2P



$z = f(x,y)$

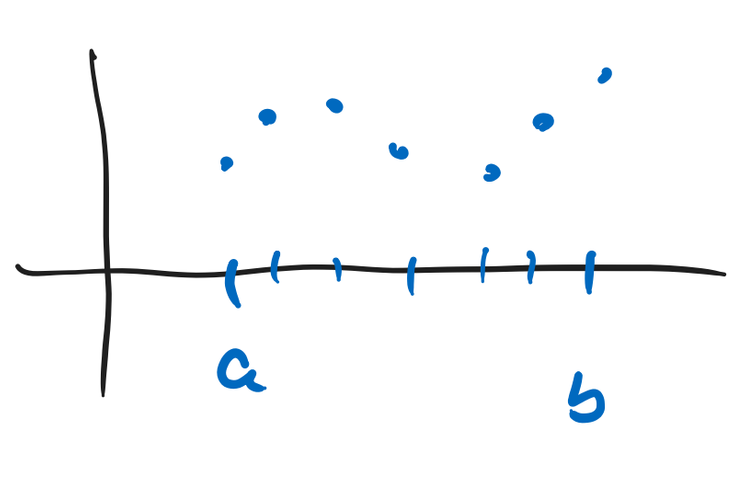
Zápis $z = f(x,y)$

Graf $f(x,y)$.

$G(f) = \{[x, y, f(x,y)],\ [x,y] \in \mathcal{D}(f)\}$

pre F1P – $G(f)$ .. jednoduché zákl.

$y = f(x)$



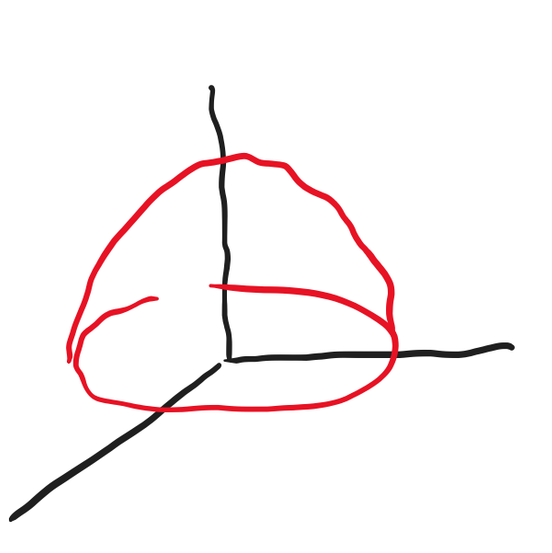
F1P
$G(f)$ – čiara

F2P
$G(f)$ – plocha
ohnutý list papier.

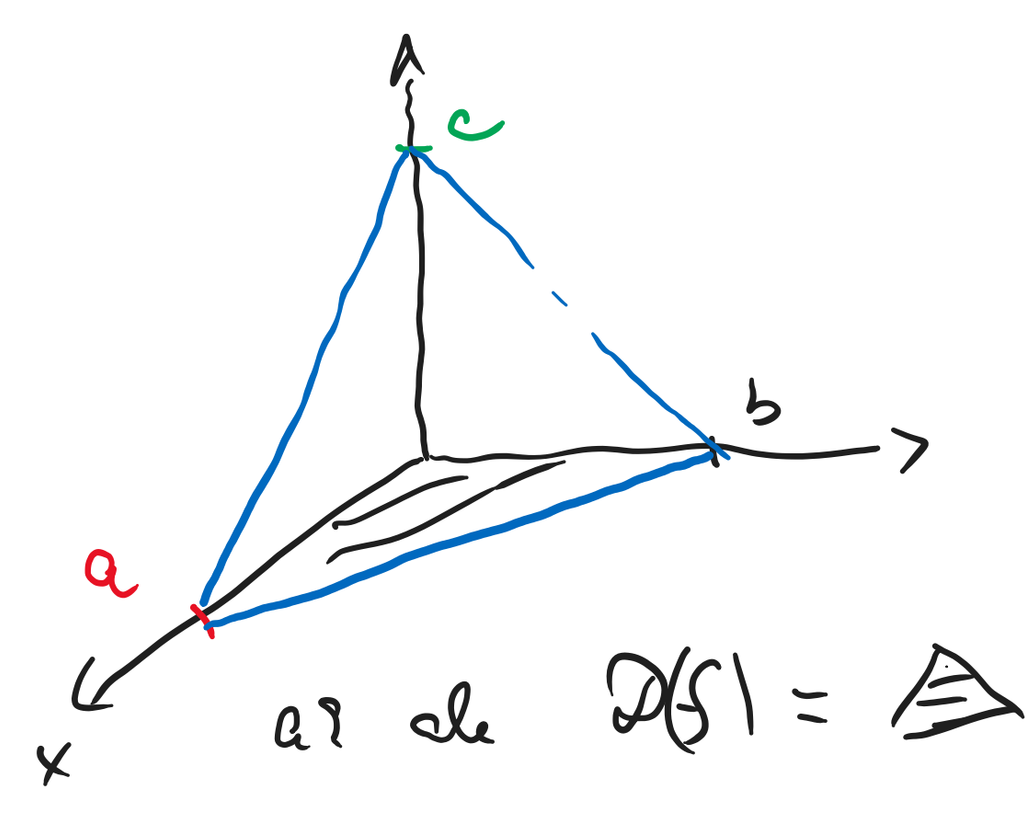
GRAFY NIEKTORÝCH FCII

1° $z^2 + x^2 + y^2 = R^2$
guľová plocha

$z = \sqrt{R^2 - x^2 - y^2}$



2. rovina
štandard $ax + by + cz + d = 0$ ↳ úsekový tvar



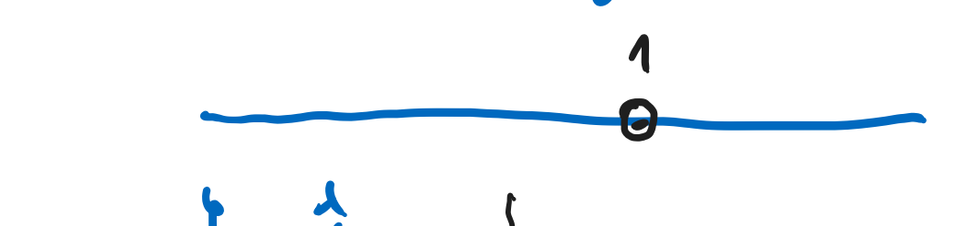
$\frac{x}{a} + \frac{y}{b} + \frac{z}{c} = 1$

a, b, c sú úseky na osiach

aj ale $\mathcal{D}(f) = $ △ tak $G(f) = $ △

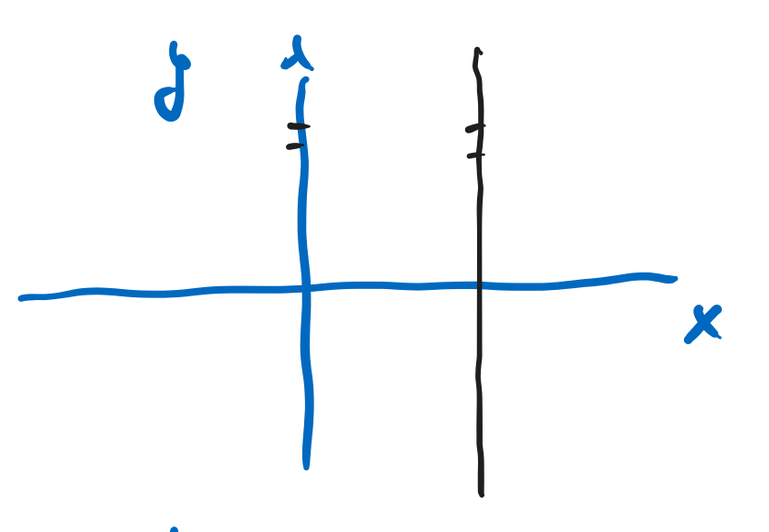
POZOR čo predstavuje rovnica $x = 1$?

1° v R^1



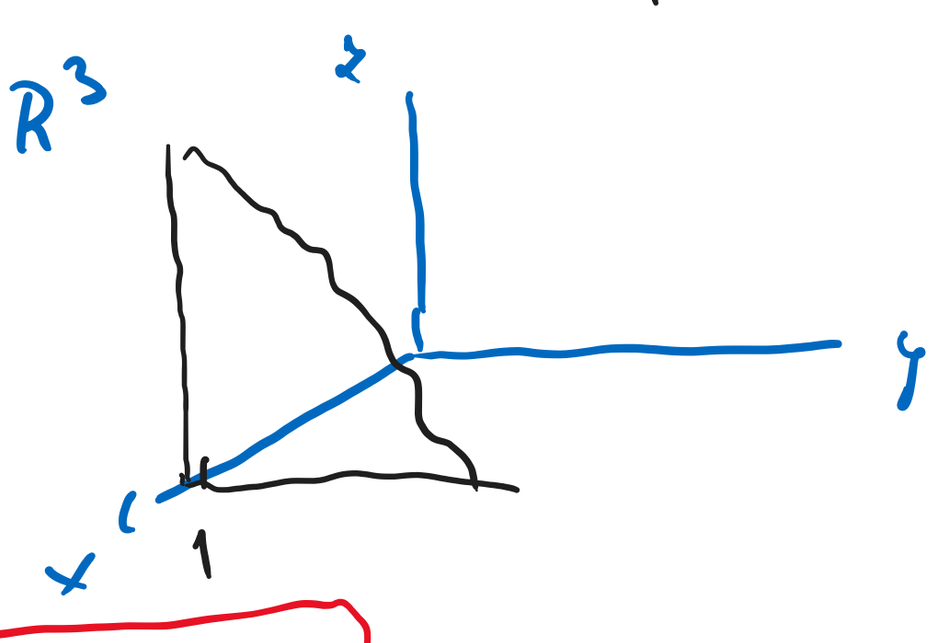
bod

2° v R^2



priamka $x = 1$

3° v R^3

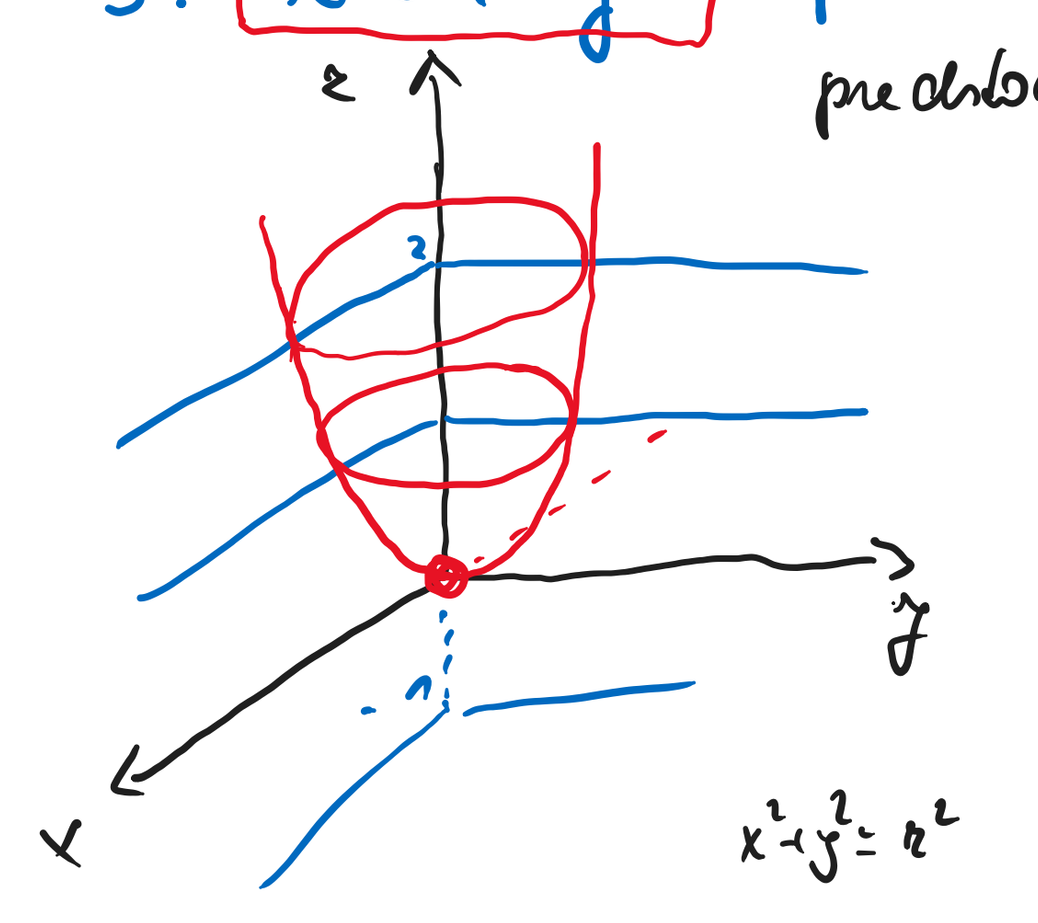


rovina ∥

$x = 1 \iff \frac{x}{1} + \frac{y}{\infty} + \frac{z}{\infty} = 1$
a b c

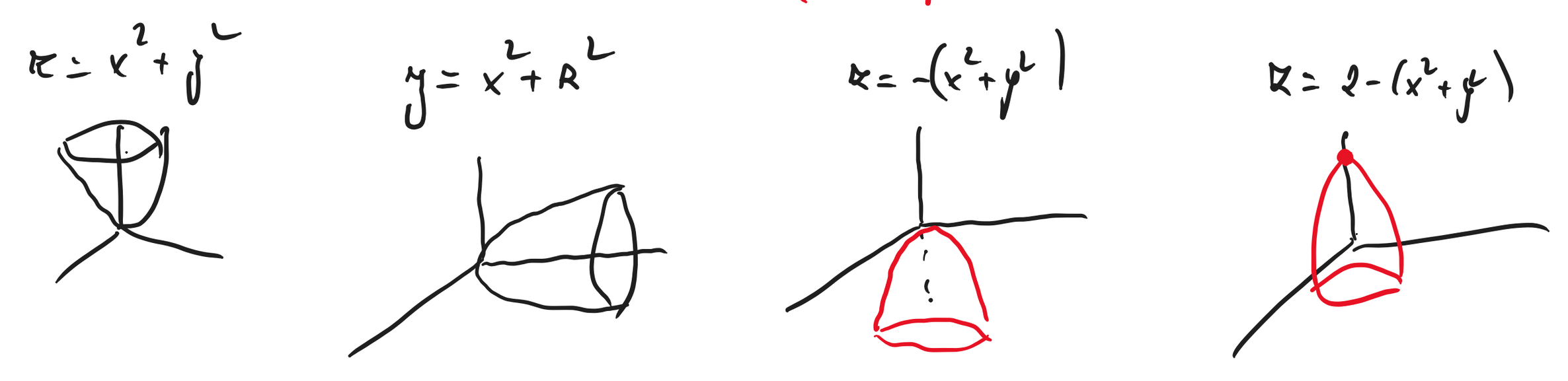
3. $z = x^2 + y^2$ paraboloid

predstava o graf —> rezy rovinami ∥ s (x,y)
$z = f(x,y)$



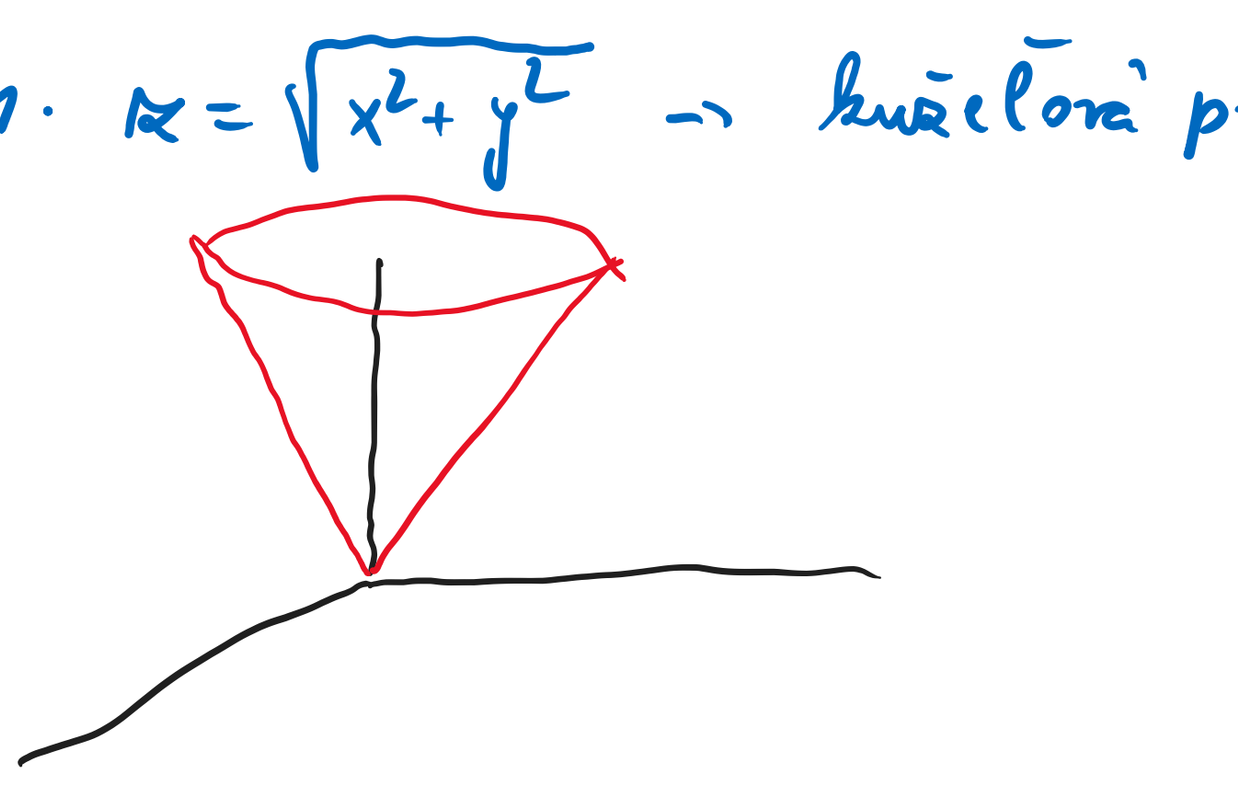
rovina	priesečnica
$z = 0$	$0 = x^2 + y^2 \to [0,0]$ bod
$z = 1$	$1^2 = 1 = x^2 + y^2 \to$ kružn. $(r=1)$
$z = 2$	$(\sqrt{2})^2 = 2 = x^2 + y^2 \to$ kruž. $(r = \sqrt{2})$
	sú kružnice nad sebou
$z = -1$	$-1 = x^2 + y^2 \to \emptyset$

chcem obrys plochy
priesečnica plochy s rovinou $y = 0$ (x,z)
$z = x^2$ – parabol.



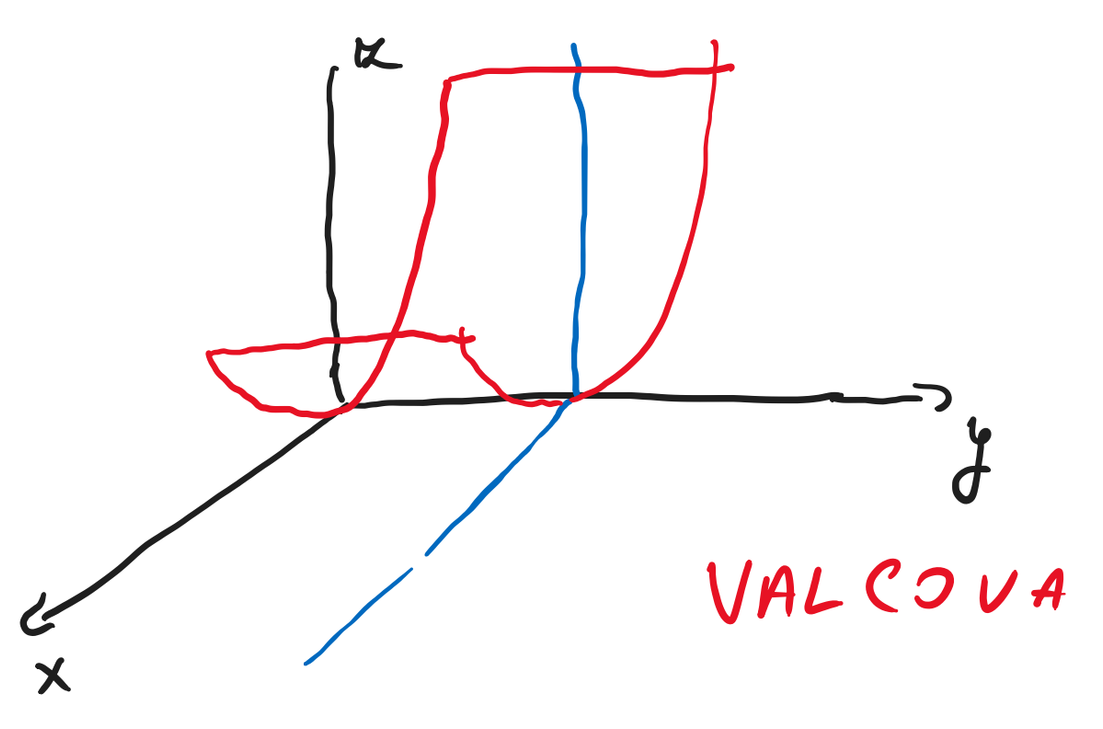
otoč
posun

4. $z = \sqrt{x^2 + y^2}$ —> kužeľová plocha



$y = x^2$ (x,y)

5 $z = x^2$ POZOR v rovine (z,x) ... PARABOLA
v R^3 ??



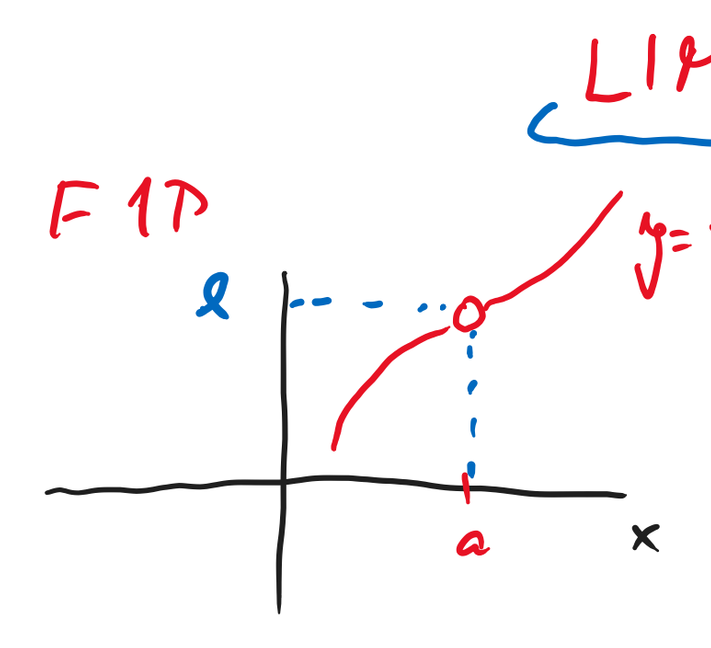
Rezy rovinami priesečníc

$y = 0 \implies z = x^2$ parabo.
(x,z)
$y = 1 \implies z = x^2$ tá istá par. (v inej rovine)

VALCOVÁ PLOCHA

LIMITA F2P (NÁZNAK = UFD)

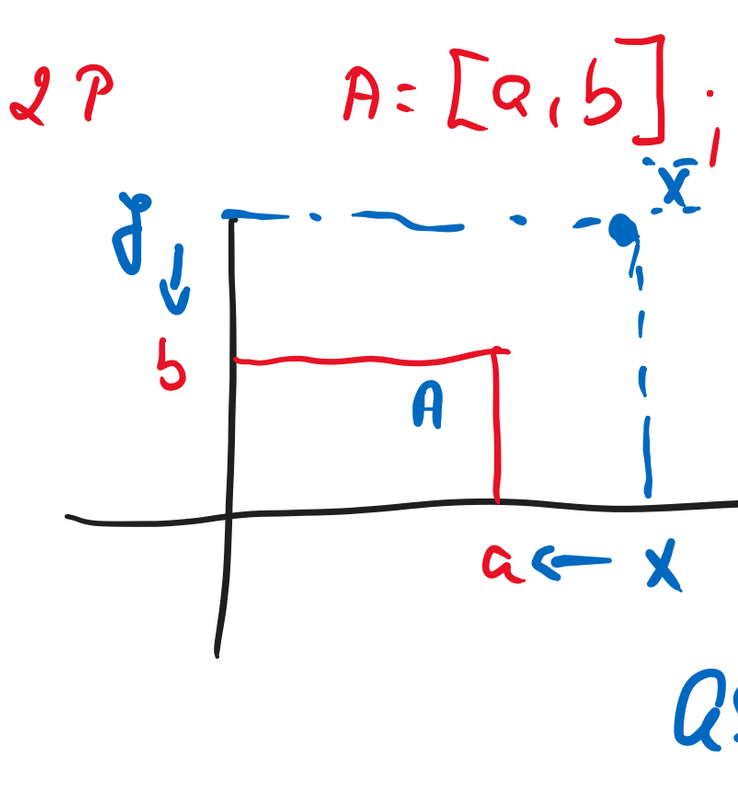
F1P



$\lim_{x \to a} f(x) = l$

UF (ak $x \to a$, tak $f(x) \to l$)

F2P $A: [a,b]$; $X = [x,y]$



? $X \to A$ t.j. ? $[x,y] \to [a,b]$
⇓
$x \to a$
$y \to b$ } Prechod do premenných

+ 1 rovnaké rovnice

Ak po $[x,y] \to [a,b]$ je $f(x,y) \to l$ tak

l nazveme LIMITA F2P v A

PRAVIDLÁ PRE VÝPOČET LIMITY F2P SÚ TOTOŽNÉ S TÝMI PRE F1P

limita (súčtu, súčinu ...) = s . . . . .

$\lim_{\substack{x \to 1 \\ y \to 2}} (x y^2) = \left(\lim_{\substack{x \to 1 \\ y \to 2}} x\right) \cdot \left(\lim_{\substack{x \to 1 \\ y \to 2}} y^2\right) = 1 . 2^2$ (F1P, F1P)

Pravidlo ak po dosadení bodu $[a,b]$ do funkcie $f(x,y)$ nenarazíme neurčitý výraz (napr $\frac{0}{0}$), tak limitu počítame dosadením (PROBLÉM)
a samotnú F2P nazývame SPOJITOU

f je spoj v $[a,b] \overset{def}{\iff} \lim_{\substack{x \to a \\ y \to b}} f(x,y) = f(a,b)$

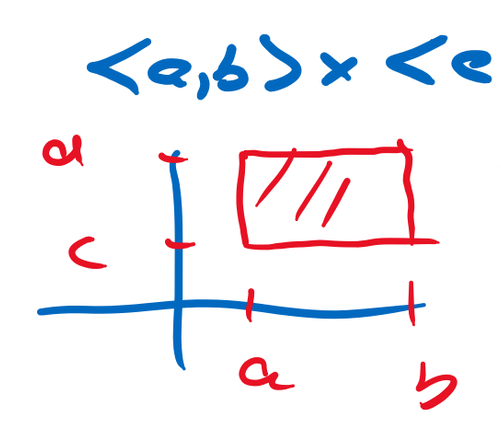
a MY BUDEME PRACOVAŤ LEN SO SPOJITÝMI FCIAMI, FINITO

F1P

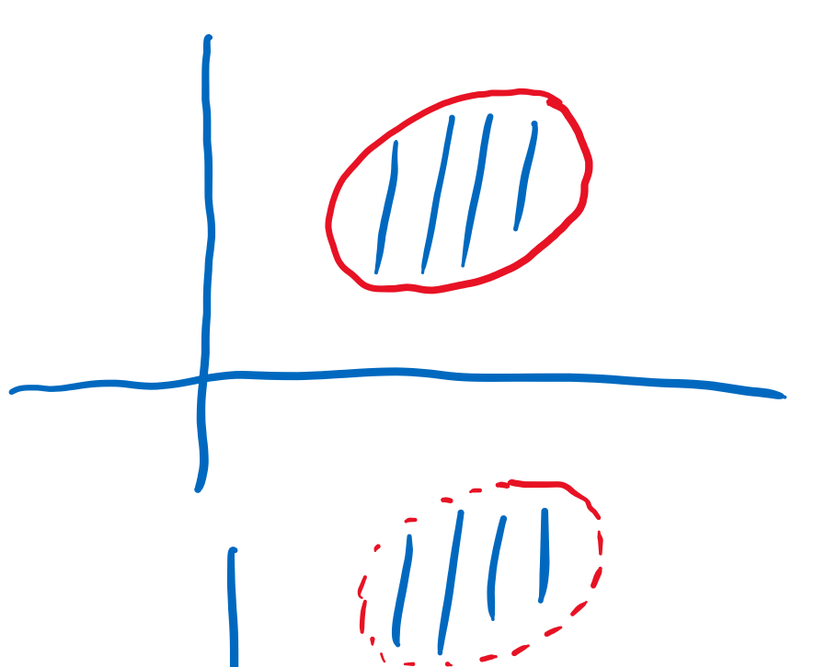
v R^1
$\langle a, b \rangle$ UZAVRETÝ
(a, b) OTVORENÝ
$\langle a, b)$ ANI ANI

F2P

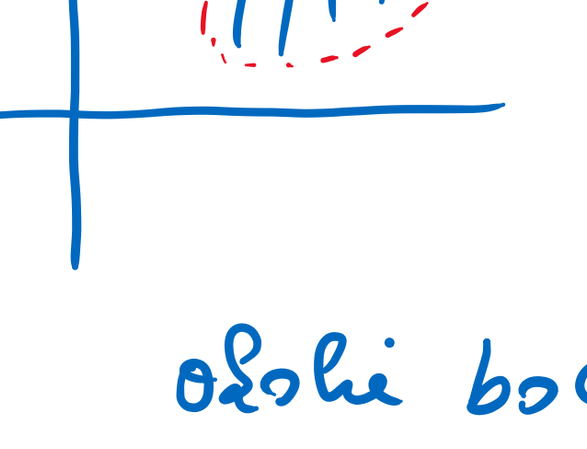
interval v R^2 $\langle a,b \rangle \times \langle c,d \rangle$



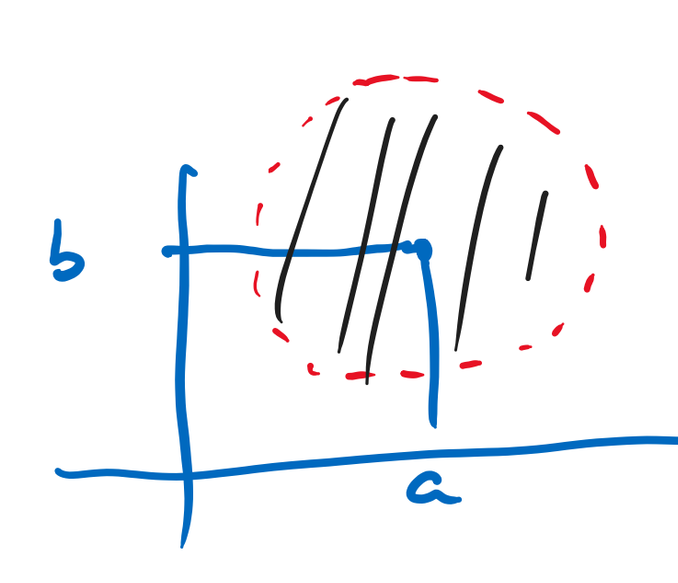
obdĺž.



mn. M —> ◯ hranica
uzavretá množina obsahuje aj svoju hranicu



žiaden bod hranice nepatrí do M



Okolie bodu $A = [a,b]$ = otvorený kruh
$O(A)$ resp $O([a,b])$