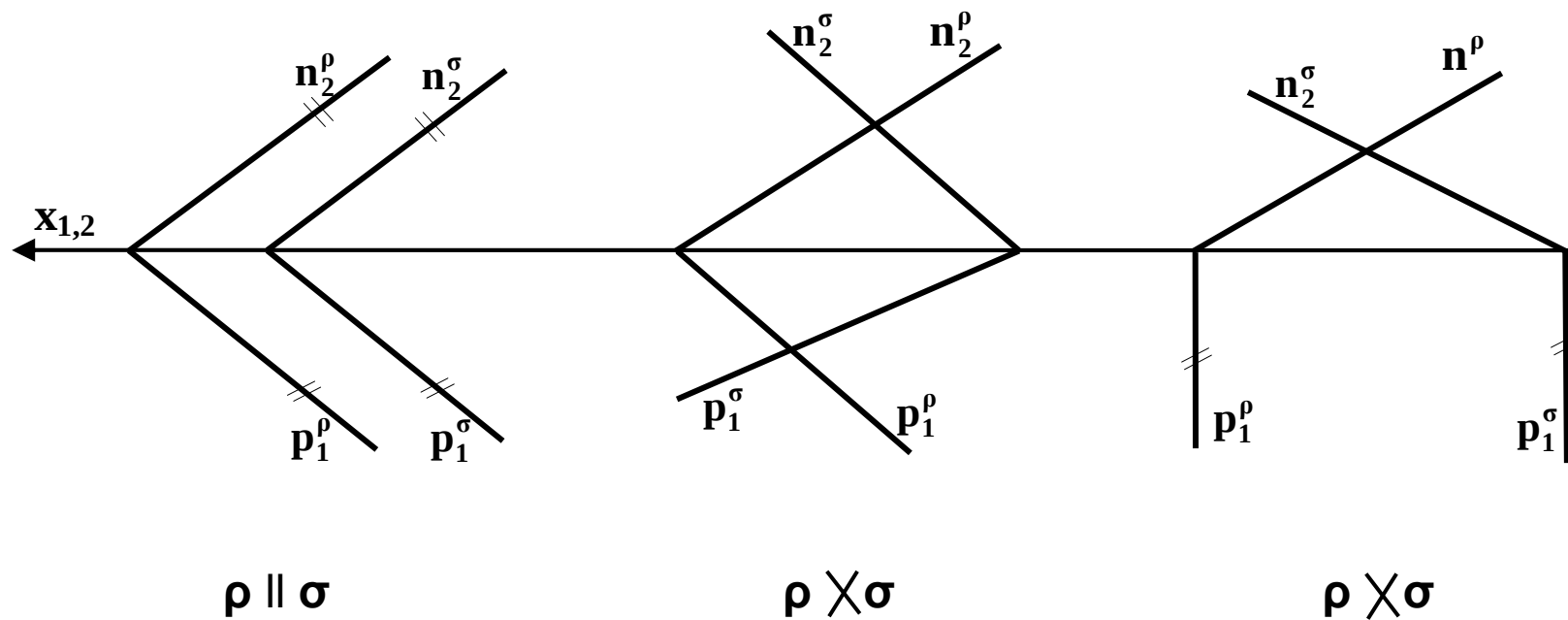


Prednáška 4

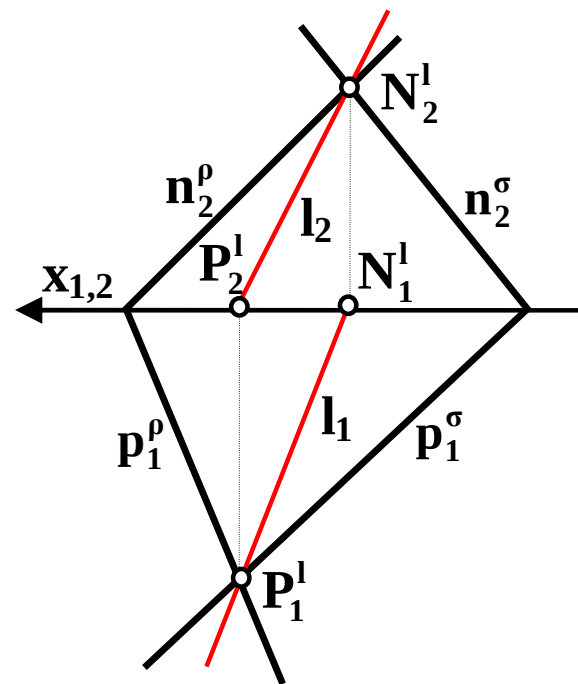
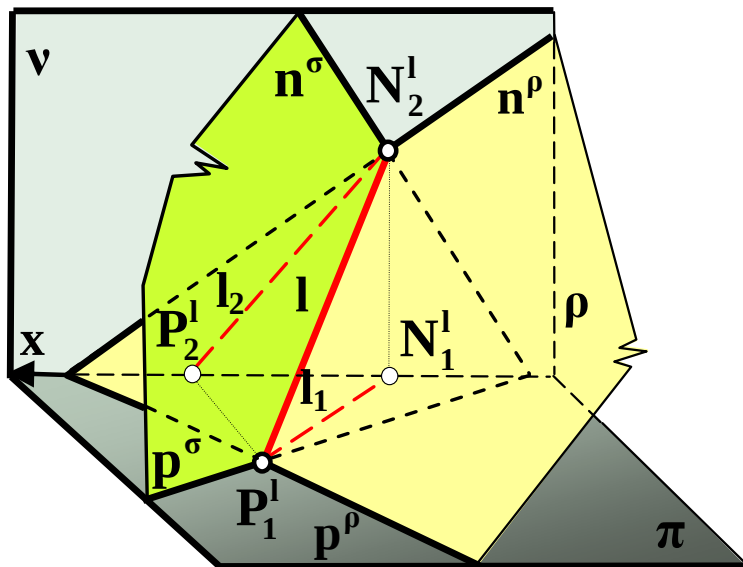
Obsah

- **Mongeova projekcia**
 - Zobrazenie dvoch rovín
 - Priesečnica dvoch rovín
 - Priesečník priamky s rovinou
 - Pomocná priemetňa
 - priemet bodu
 - priemet roviny
 - Zobrazenie jednoduchých telies

Zobrazenie dvoch rovín



Priesečnica rôznobežných rovín

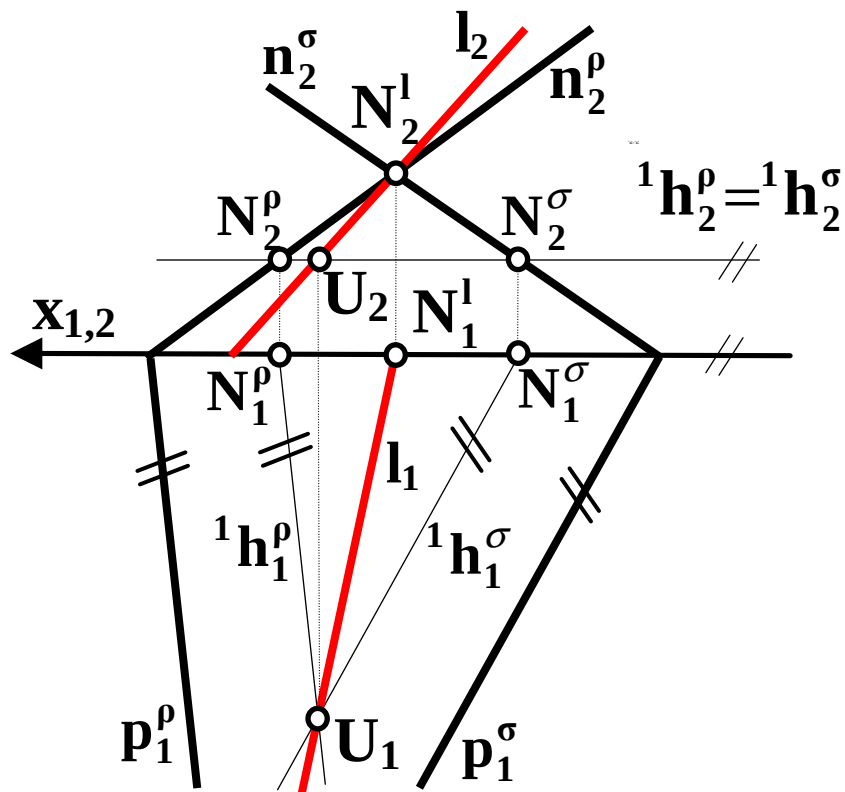


Postup

1. P_1^l, N_2^l
2. P_2^l, N_1^l
3. $l_1 = P_1^l N_1^l, l_2 = P_2^l N_2^l$

Priesečnica rôznobežných rovín

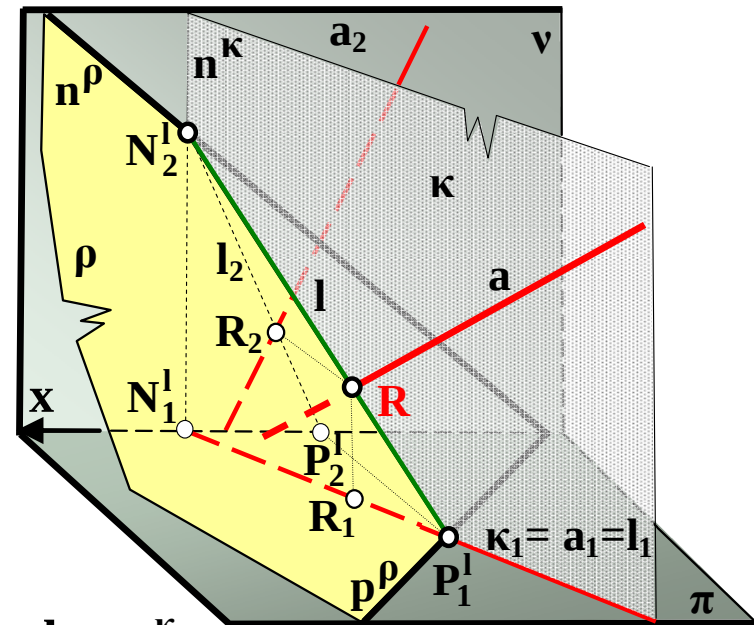
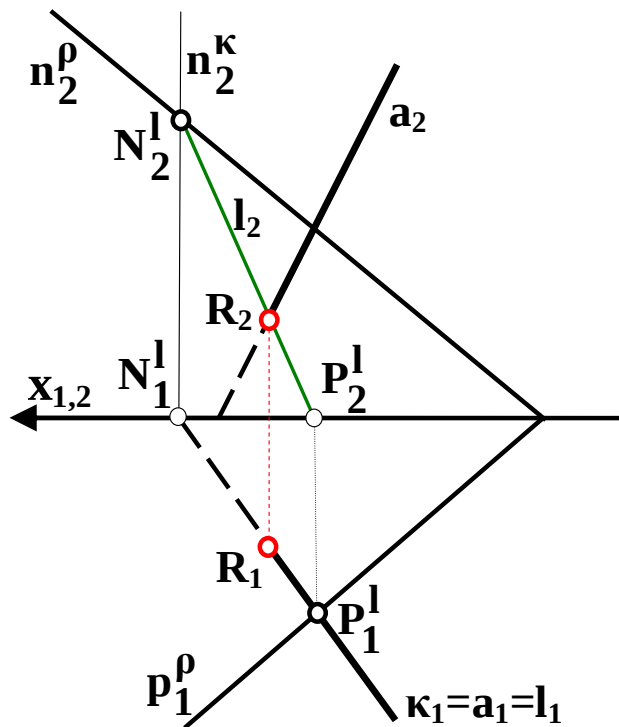
(keď je stopník mimo nákresne)



Postup

1. N_2^l, N_1^l
2. ${}^1h_2^\rho = {}^1h_2^\sigma$, N_1^ρ, N_1^σ
3. ${}^1h_1^\rho, {}^1h_1^\sigma$
4. $U_1 = {}^1h_1^\rho \cap {}^1h_1^\sigma$, U_2
5. $l_1 = U_1 N_1^l$, $l_2 = U_2 N_2^l$

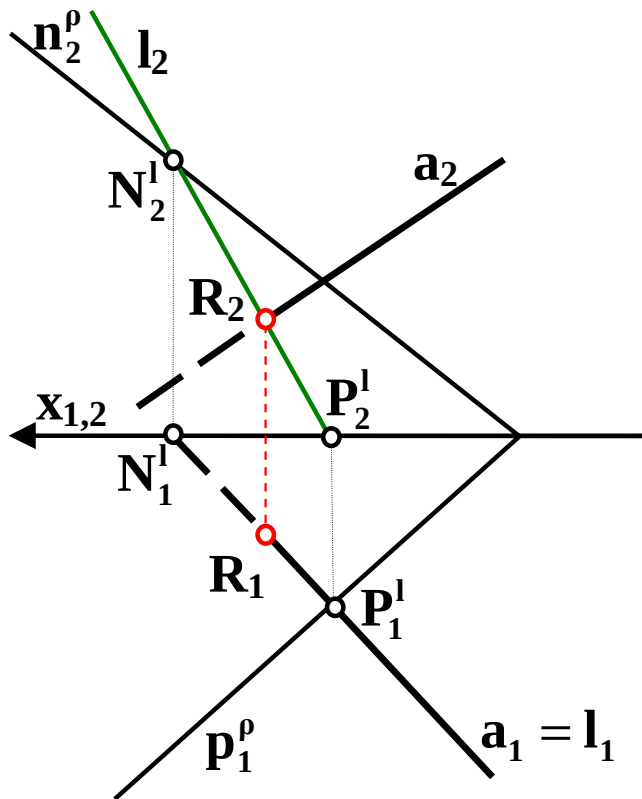
Priesečník priamky s rovinou



Postup

1. $\kappa_1 = a_1 = l_1, n_2^\kappa$
2. P_1^l, N_2^l
3. P_2^l, N_1^l
4. $l_1 = P_1^l N_1^l, l_2 = P_2^l N_2^l$
5. $R_2 = l_2 \cap a_2, R_1 \in a_1$
6. viditeľnosť

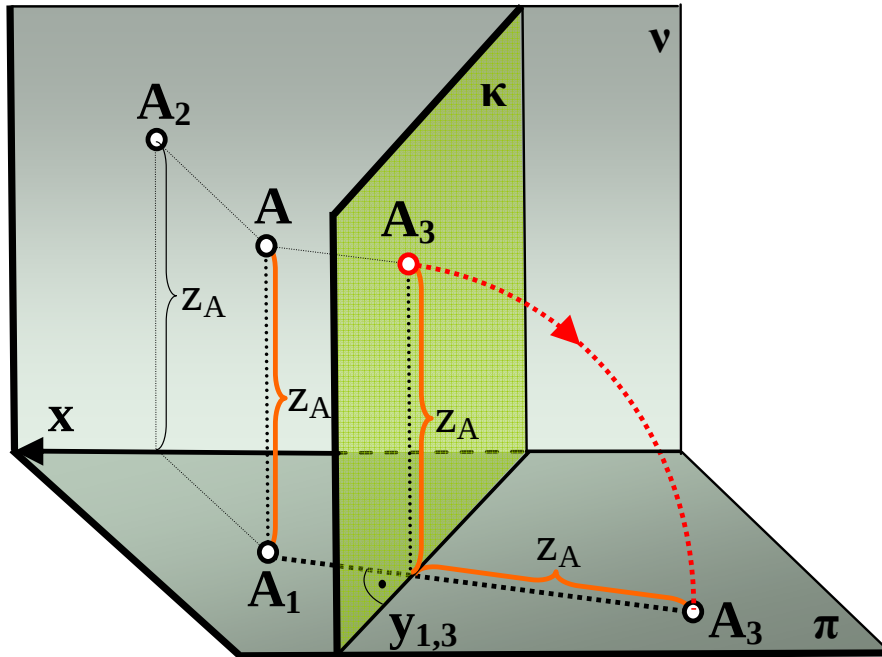
Priesečník priamky s rovinou – pomocou krycej priamky



Postup

1. $\mathbf{a}_1 = \mathbf{l}_1$, $\mathbf{l} \dots$ krycia priamka
2. $\mathbf{l}_1 = \mathbf{P}_1^{\mathbf{l}} \mathbf{N}_1^{\mathbf{l}}$
3. $\mathbf{l}_2 = \mathbf{P}_2^{\mathbf{l}} \mathbf{N}_2^{\mathbf{l}}$
4. $\mathbf{R}_2 = \mathbf{l}_2 \cap \mathbf{a}_2$, $\mathbf{R}_1 \in \mathbf{a}_1$
5. viditeľnosť

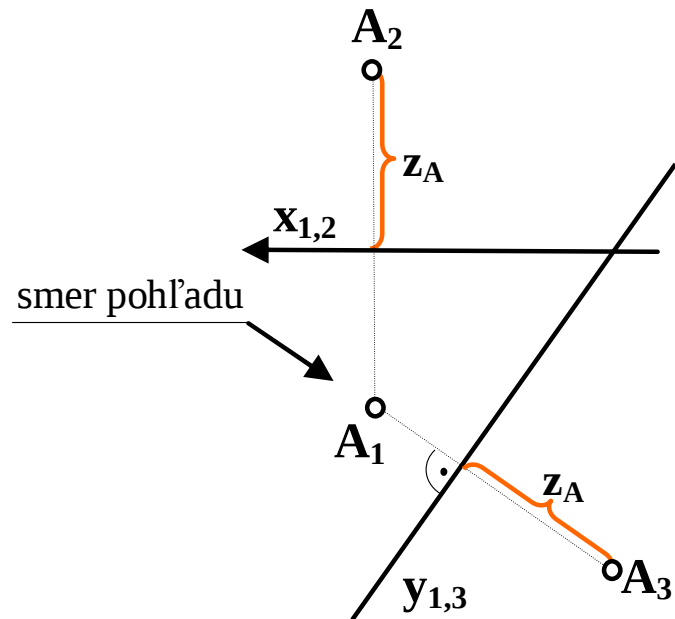
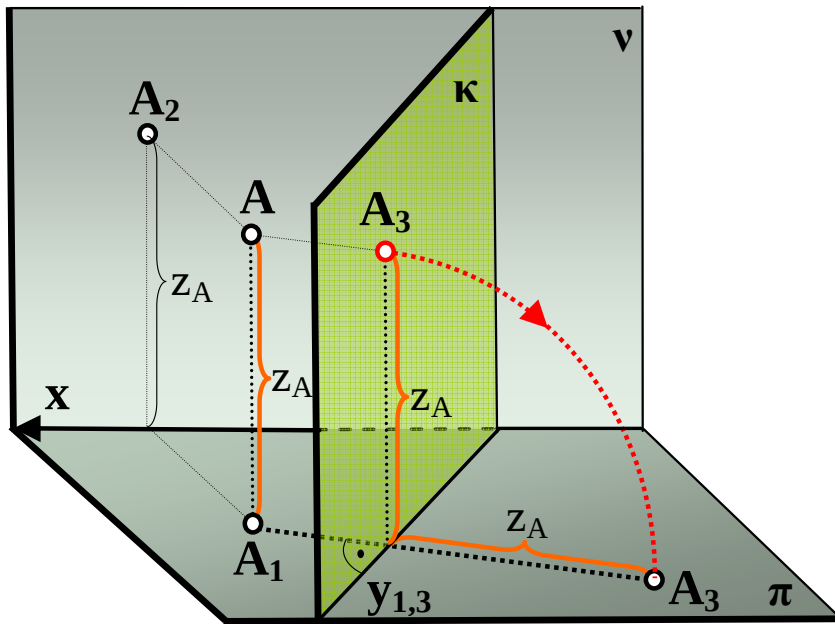
(tretia priemetňa)



- a) kolmá na pôdorysňu } vedľajšia
b) kolmá na nárysňu }
- c) kolmá na π aj v - hlavná

Priemet bodu do pomocnej priemetne

a) $\mathbf{K} \perp \boldsymbol{\pi}$

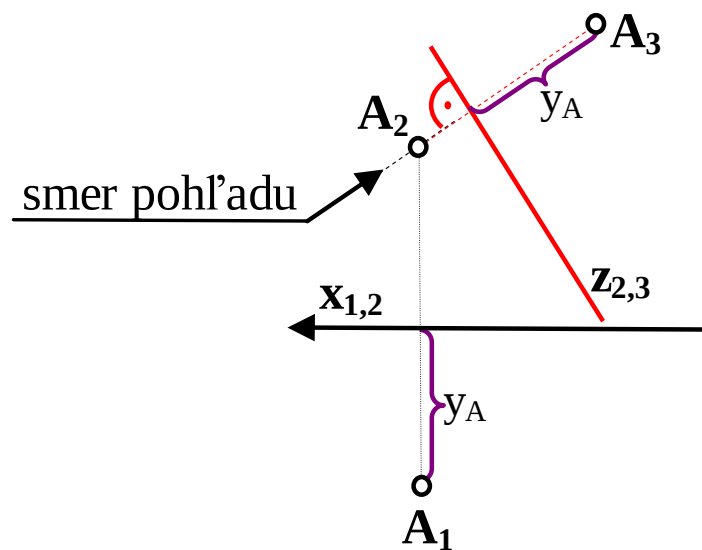


Postup

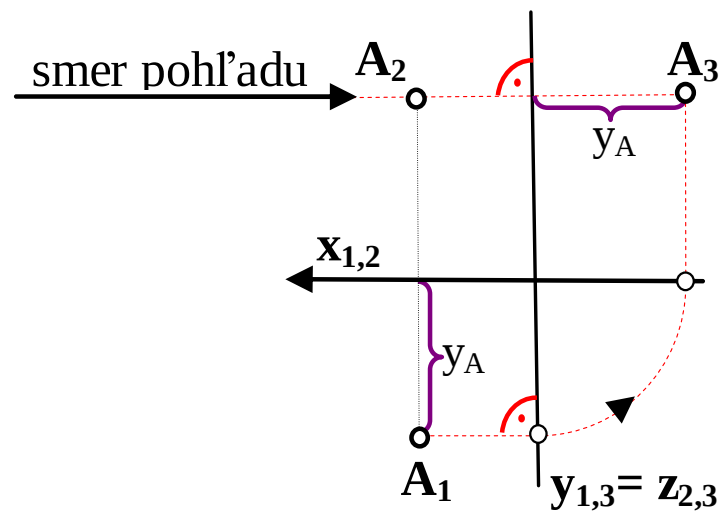
1. $y_{1,3} \perp \text{smer_pohladu}$
2. A_3

Priemet bodu do pomocnej priemetne

b) $\kappa \perp \mathbf{v}$



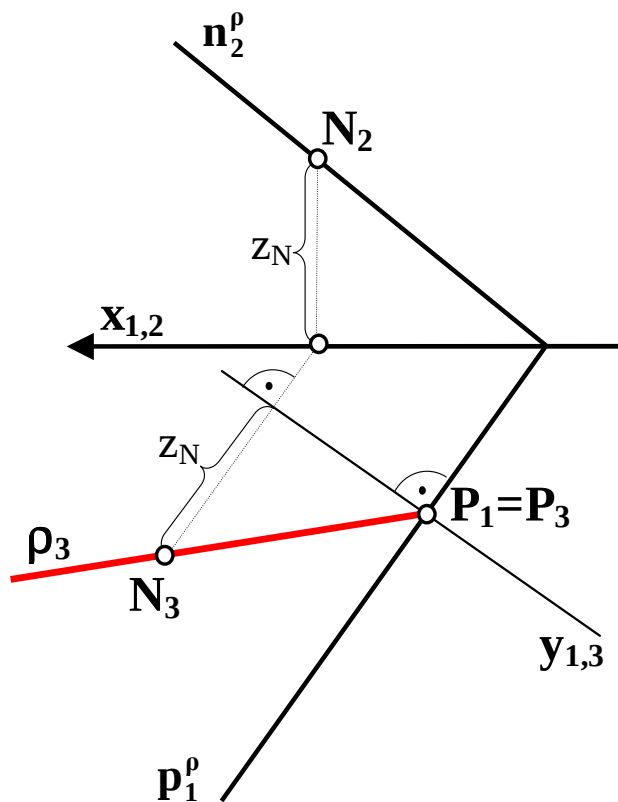
c) $\kappa \perp \pi \wedge \kappa \perp \mathbf{v}$



Priemet roviny kolmej na pomocnú priemetňu

Dané: rovina $\rho(p_1^\rho, n_2^\rho)$

Zostrojte: tretí priemet roviny ρ do pomocnej priemetne kolmej na π

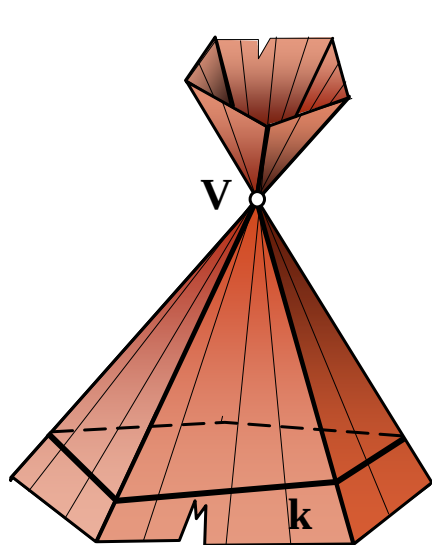


Postup

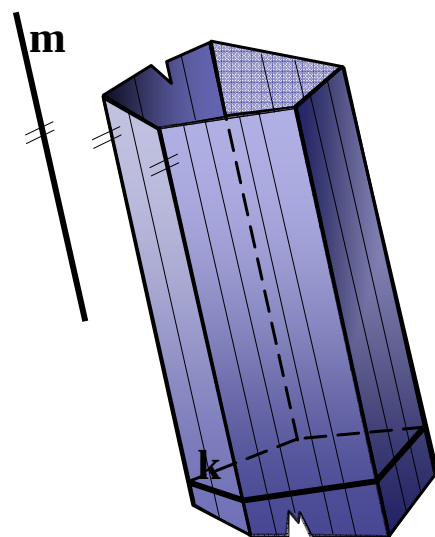
1. $y_{1,3} \perp p_1^\rho$
2. $P_1 = P_3$ – bod_roviny
3. N_2 – zvolit' - N_1 – zostrojit'
4. N_3
5. $\rho_3 = N_3P_3$ – tretí_priemet_roviny

Zobrazenie jednoduchých telies

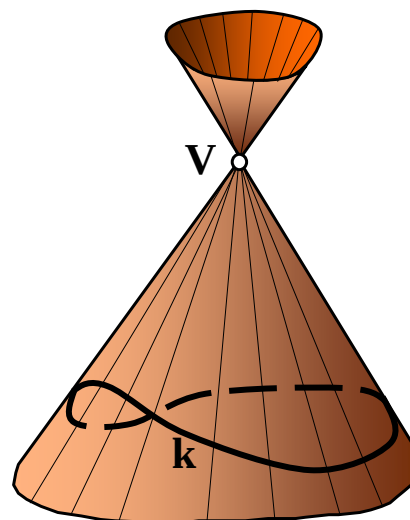
Jednoduché plochy



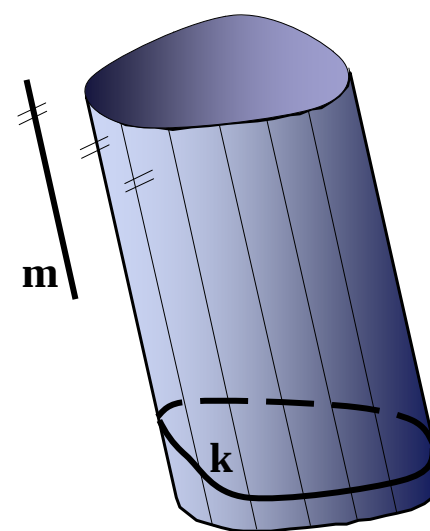
ihlanová



hranolová

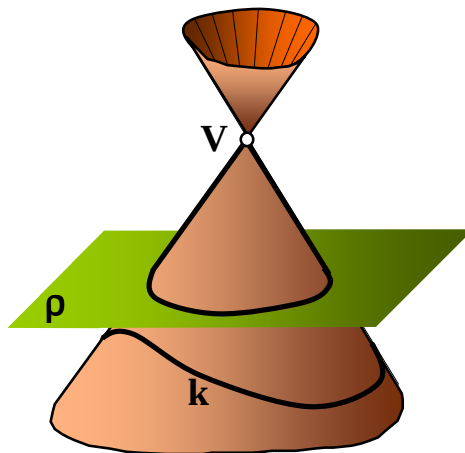
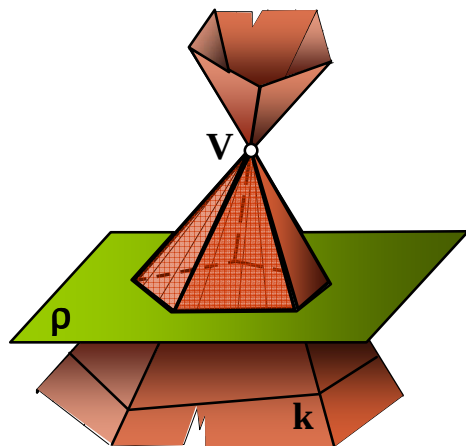


kuželová



valcová

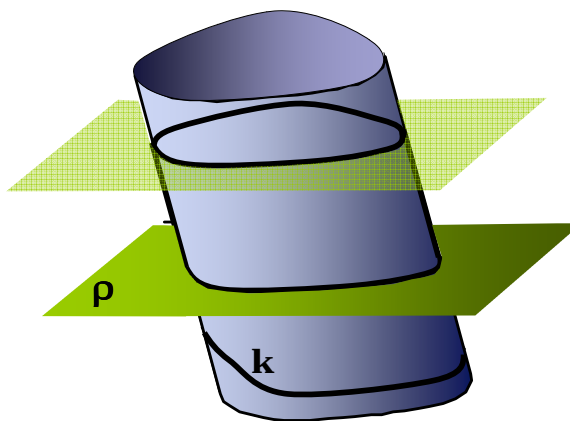
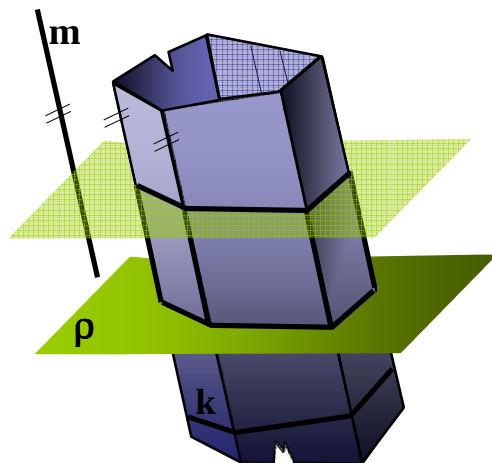
Jednoduché tělesa



ihlan

kužel'

část prostoru
ohraničená
uzavretou
plochou a rovinou

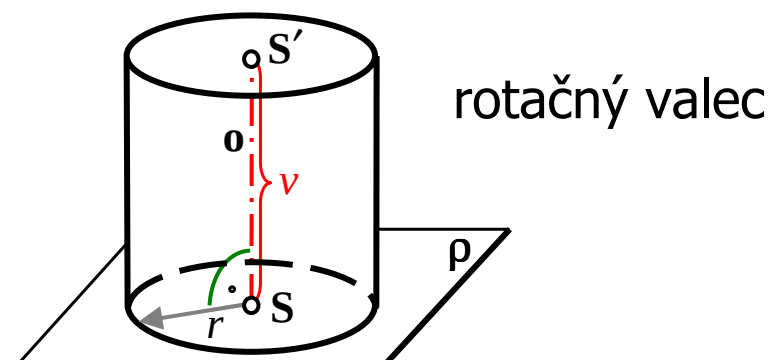
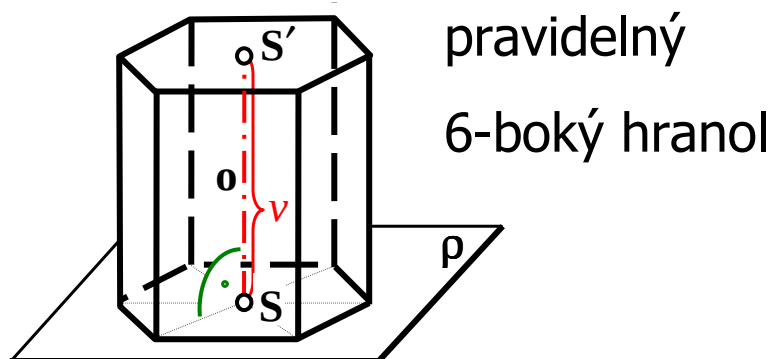
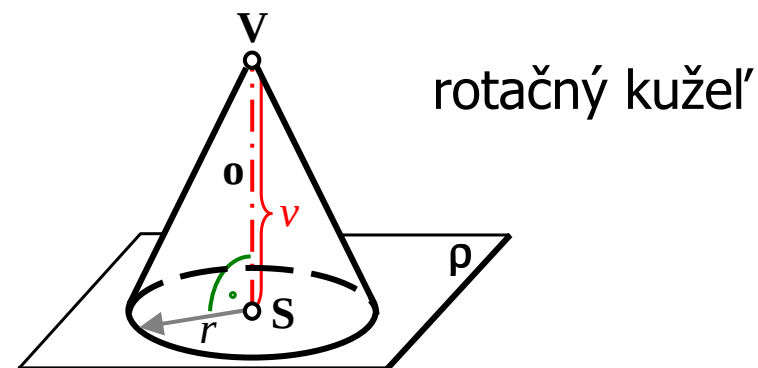
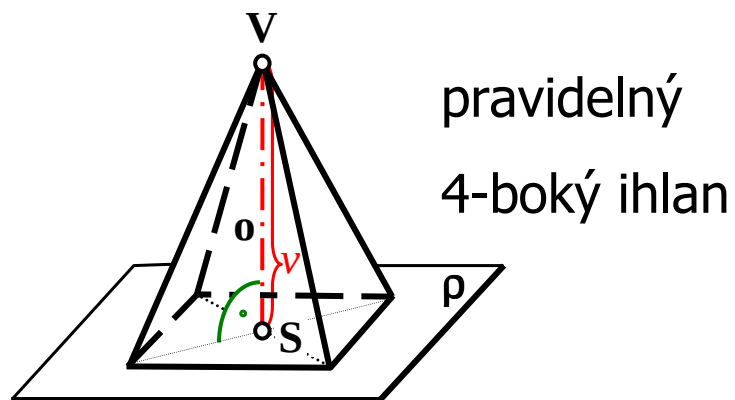


hranol

valec

část prostoru
ohraničená
uzavretou
plochou a dvěma
rovnoběžnými
rovinami

Jednoduché tělesá



podstava: pravidelný n-uholník

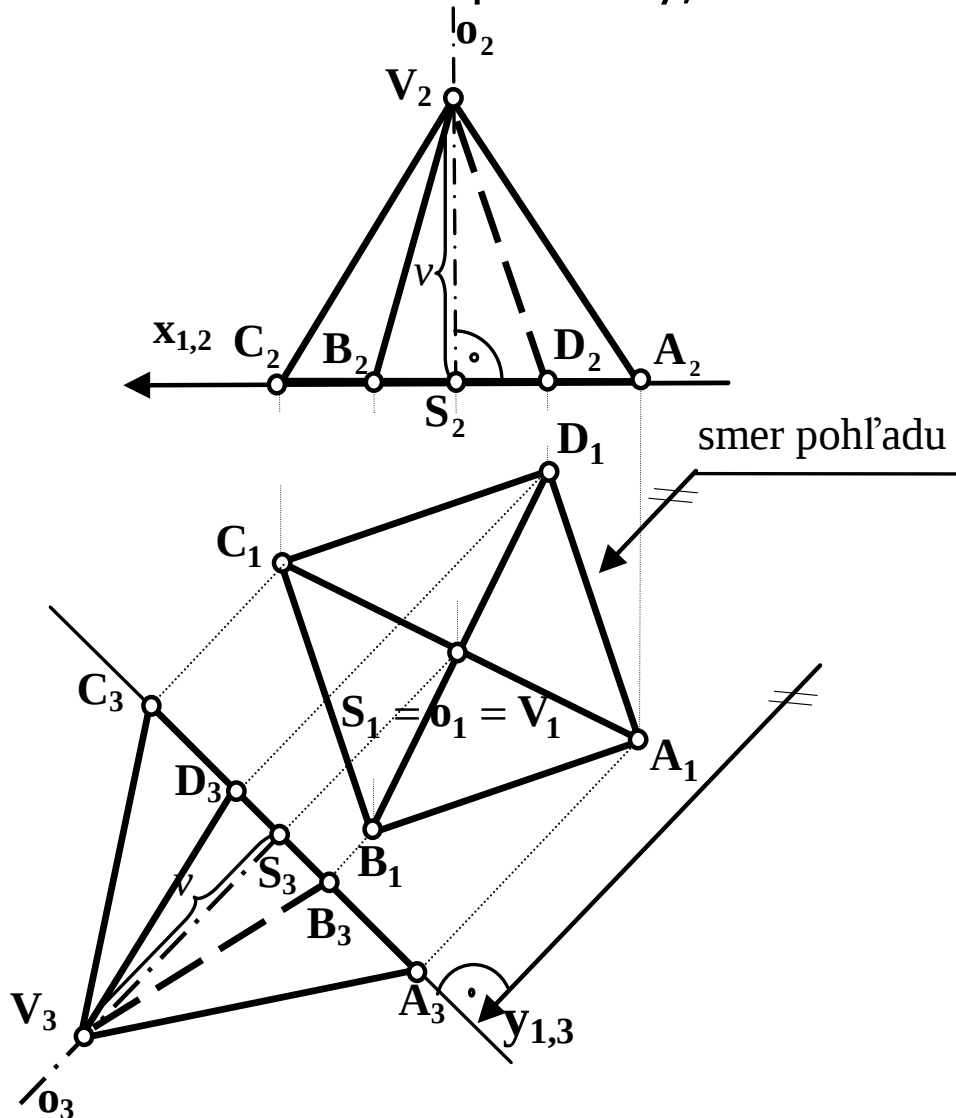
os: kolmá na rovinu podstavy

podstava: kružnica

os: kolmá na rovinu podstavy

Úloha 1: Zobrazte pravidelný 4-boký ihlan s podstavou v π .
Zostrojte pomocný priemet do roviny kolmej na π .

Dané: S - stred podstavy, A – vrchol podstavy, v – výška telesa

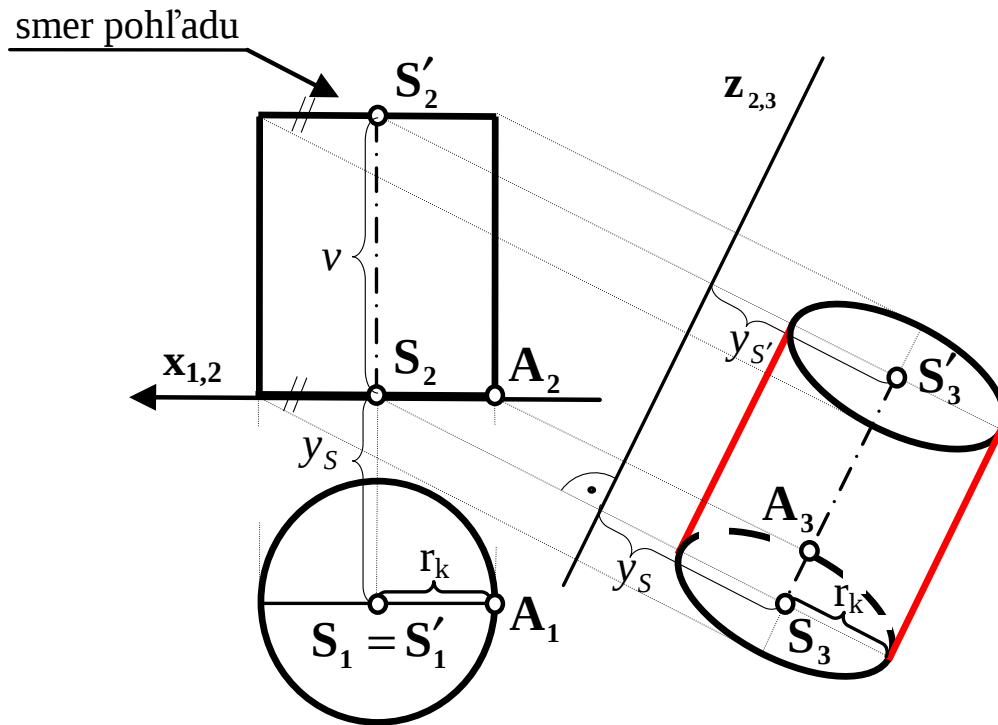


Postup

1. $A_1B_1C_1D_1, A_2B_2C_2D_2$
2. V_1, V_2
3. hrany $A_1V_1, \dots$
4. $y_{1,3} \perp \text{smer_pohladu}$
5. $A_3B_3C_3D_3$
6. V_3
7. hrany $A_3V_3, \dots$

Úloha 2: Zobrazte rotačný valec s podstavou v π . Zostrojte nadhľad telesa (priemet do roviny kolmej na $\mathbf{v}$).

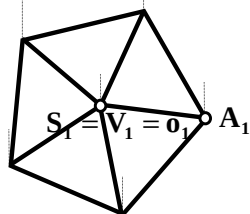
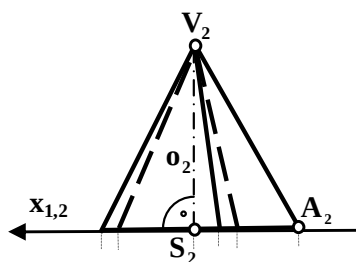
Dané: S - stred podstavy, r_k – polomer podstavy, v – výška telesa



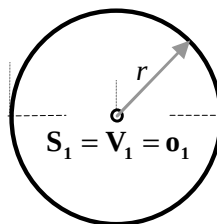
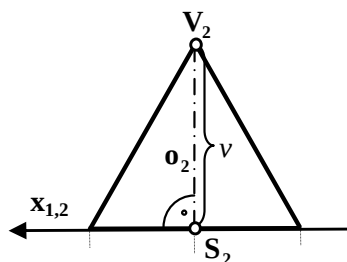
Postup

1. podstava_1.,2.priemet
2. S'_1, S'_2
3. horná_podstava
4. obrys
5. $z_{2,3}$
6. $S_3 S'_3$
7. priemet_dolnej_podstavy
8. priemet_hornej_podstavy
9. viditelnosť

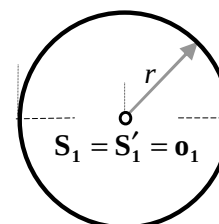
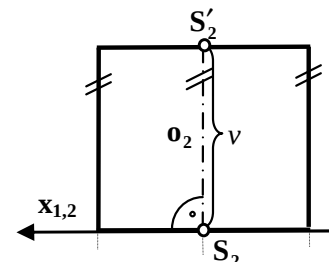
Združené priemety jednoduchých telies



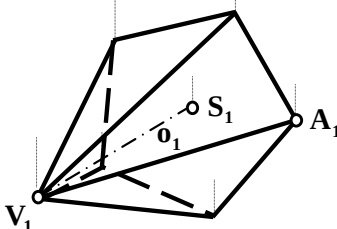
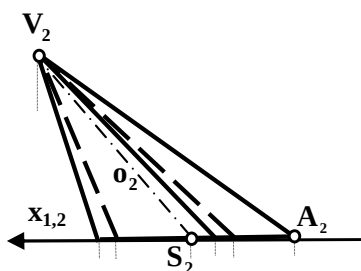
pravidelný 5-boký ihlan



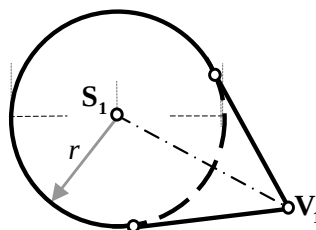
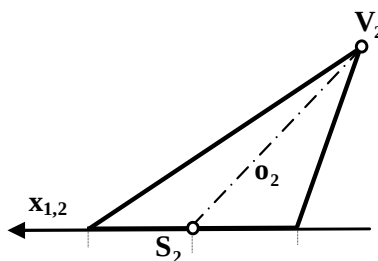
rotačný kužeľ



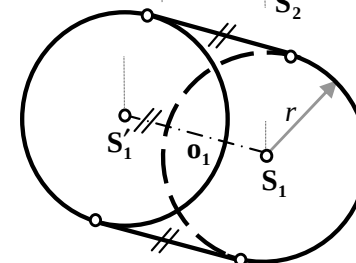
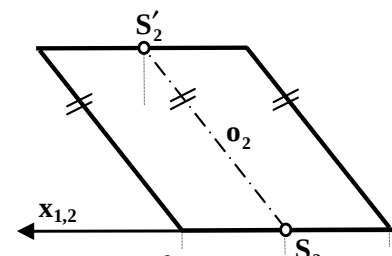
rotačný valec



šikmý 5-boký ihlan



šikmý kruhový kužeľ



šikmý kruhový valec