STUPEŇ STATICKÉ NEURČITOSTI A VOLBA ZÁKLADNÍ STAT. URČITÉ SOUSTAVY (ZSUS)

- vzorec

$$n_s = 3u - p_r + (a-3)$$ (v nepozná výjimkové případy)

u ... počet uzavřených příhrad

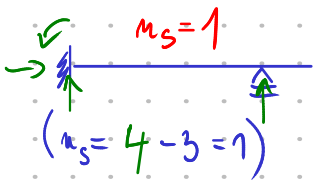
p_r ... počet jednoduchých vnitřních kloubů

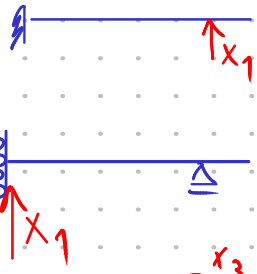
a ... počet složek reakcí

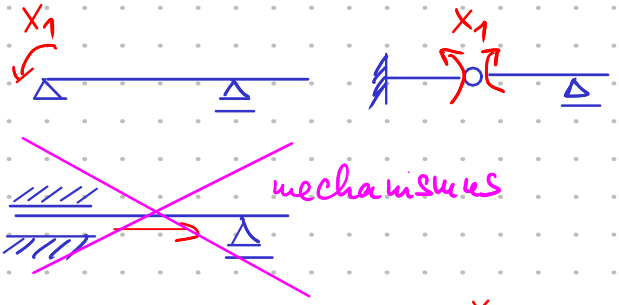
$p_r = 1$ $p_r = 2$

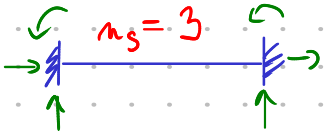
- ZSUS - vznikne odebráním vnějších a vnitřních vazeb a jejich nahrazením reakcemi resp. interakcemi
(nesmí vzniknout mechanismus ani výjimkový případ)

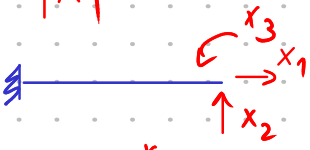
- kolik je n_s, tolik je potřeba odebrat vazeb

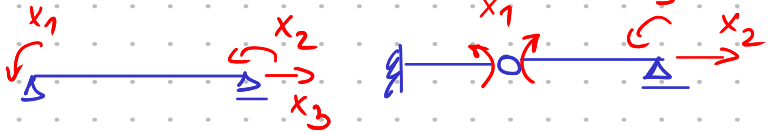


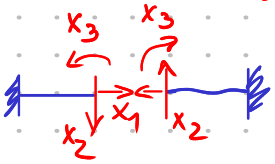


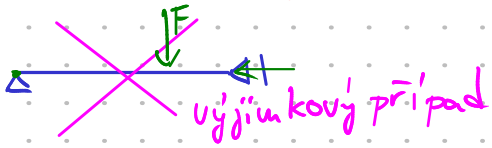


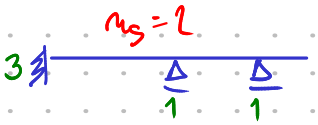


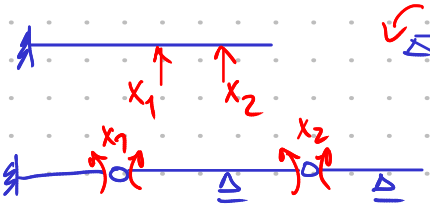


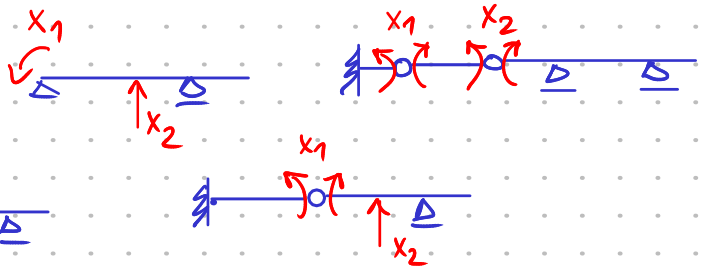




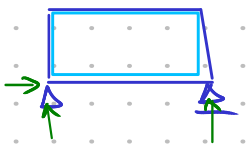


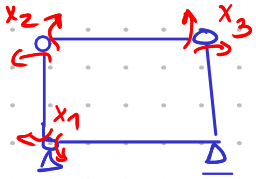


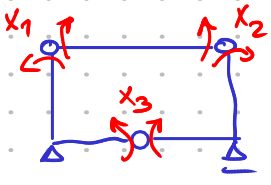


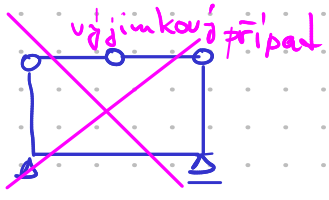


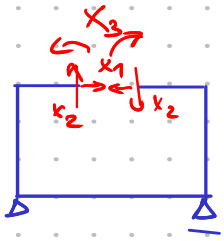
$(n_s = 3 \cdot 1 + 0 + (3-3) = 3)$

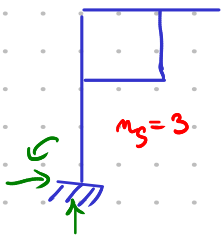


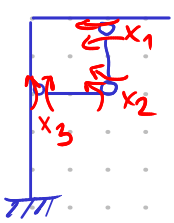


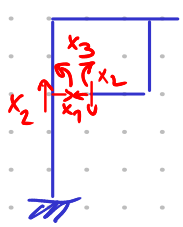


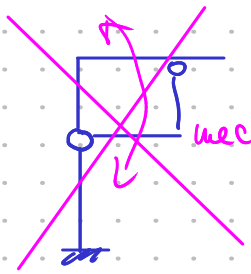


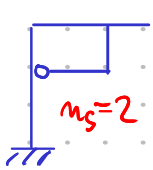


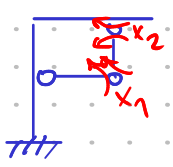


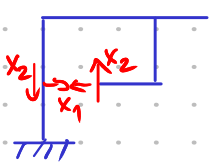


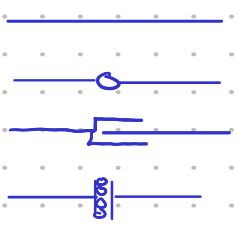


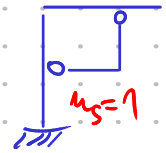


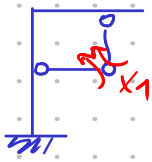


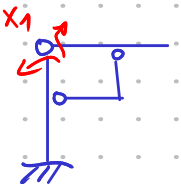


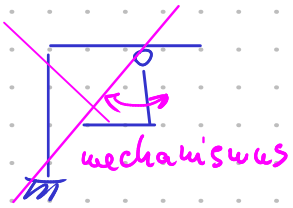


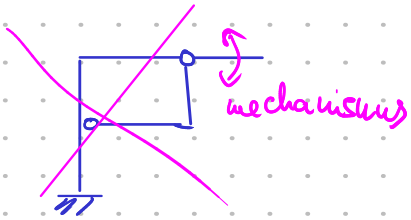


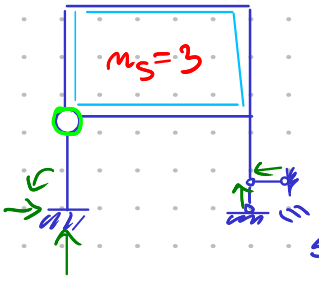


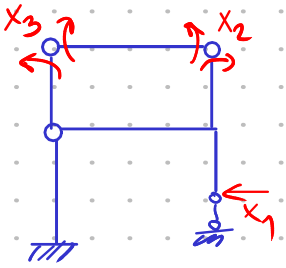




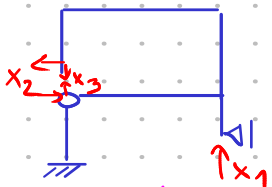


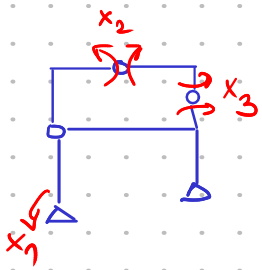


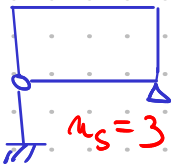


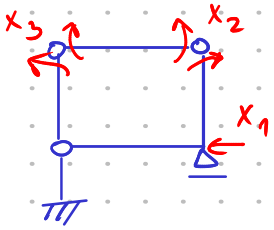


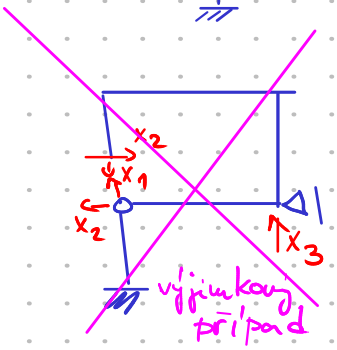
$(n_s = 3 \cdot 1 - 2 + 5 - 3 = 3)$

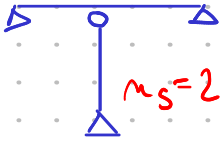


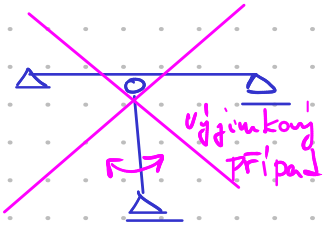


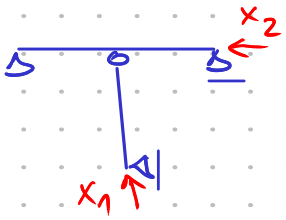


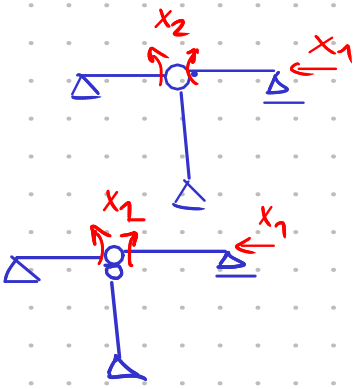












Příhradové konstrukce

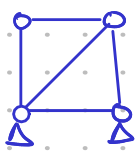
$2b = p + a$
stat. určitá

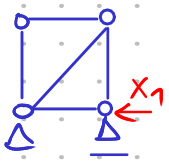
b ... počet styčníků
p ... počet prutů
a ... počet reakcí

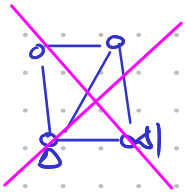
$2b < p + a$ → stat. neurčitá
$2b > p + a$ → stat. přeurčitá

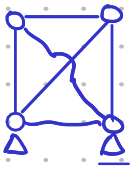
vnější $n_{sz} = a - 3$

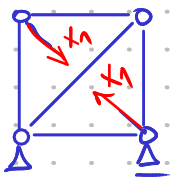
vnitřní $n_{sv} = p + 3 - 2b$

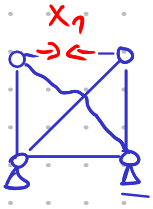


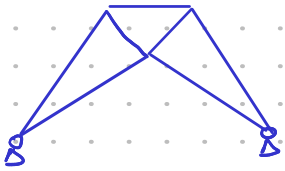






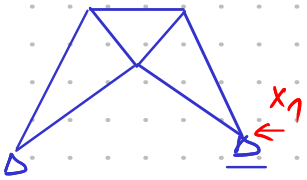


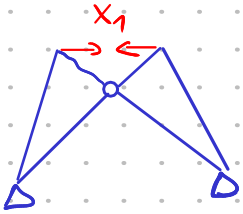




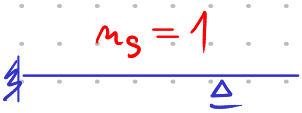
$n_{SI} = 4-3=1$

$n_{SV} = 7+3-2\cdot5=0$



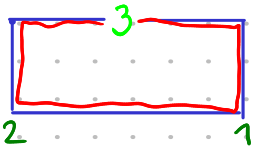


Stupeň statické neurčitosti

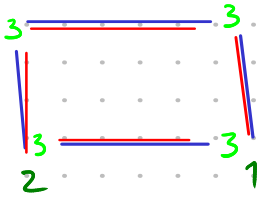


$n_S = 4-3\cdot1 = 1$

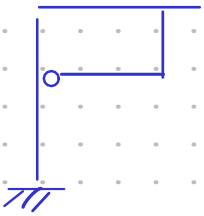
$n_S = (4+3)-3\cdot2 = 1$

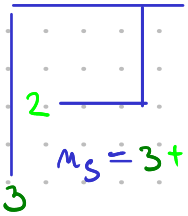


$n_S = 3+3-3\cdot1 = 3$

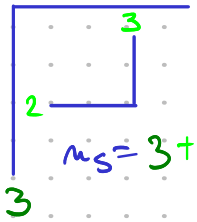


$n_S = 3+12-3\cdot4 = 3$

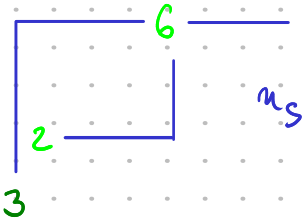




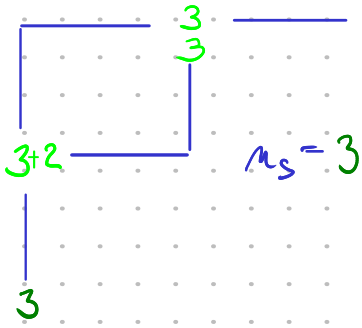
$n_S = 3+2-3\cdot1 = 2$



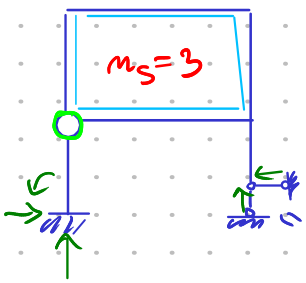
$n_S = 3+5-3\cdot2 = 2$

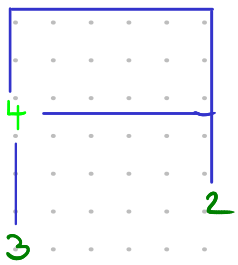


$n_S = 3+8-3\cdot3 = 2$

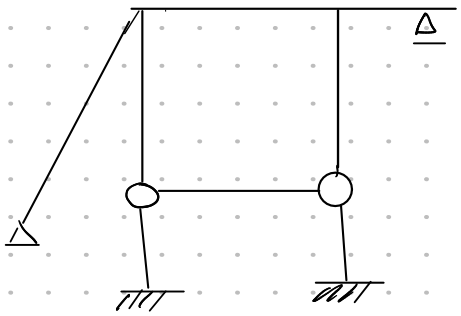


$n_S = 3+11-3\cdot4 = 2$

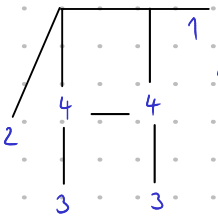




$n_S = 5+4-3\cdot2 = 3$

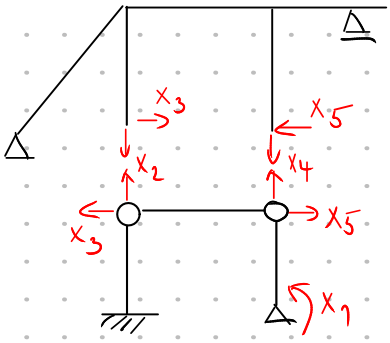


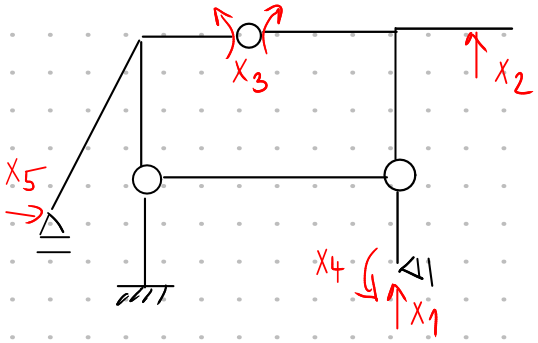
kontrola:

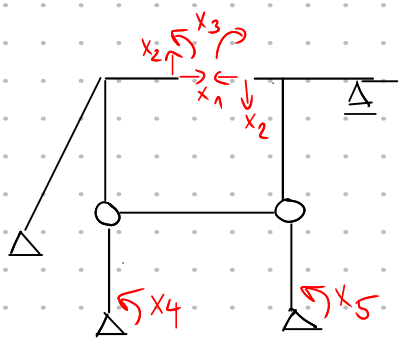


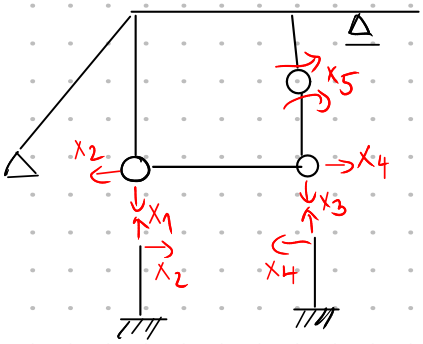
$n_s = 14 - 3 \cdot 4 = 5$

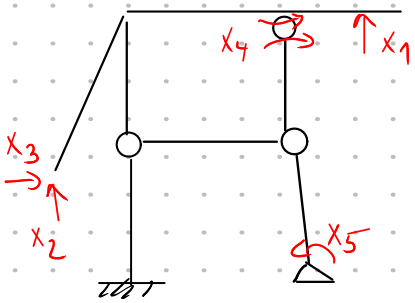
$n_s = 3u - p_{\check{c}} + (a-3) = 3 \cdot 1 - 4 + (9-3) = 5$

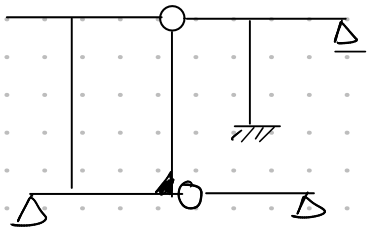






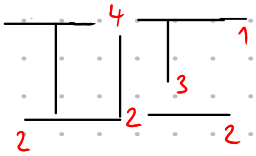






kontrola:

$n_s = 3u - p_{\check{c}} + (a-3) = 3 \cdot 1 - 3 + (8-3) = 5$



$n_s = 14 - 3 \cdot 3 = 5$