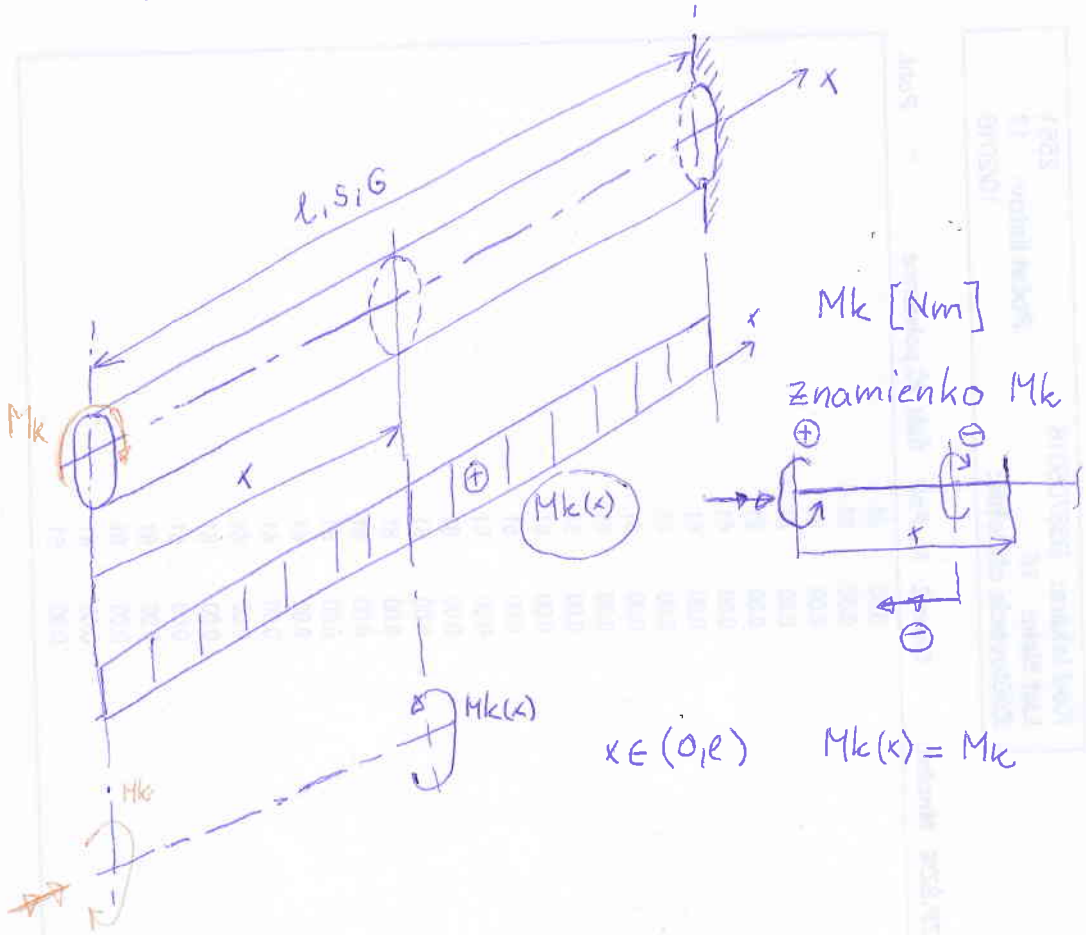
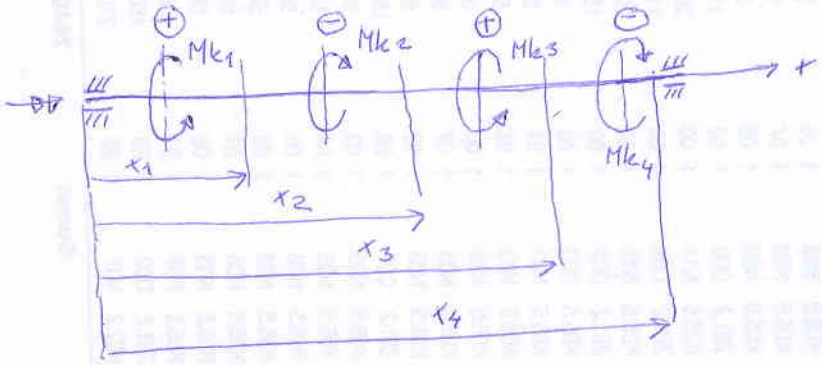
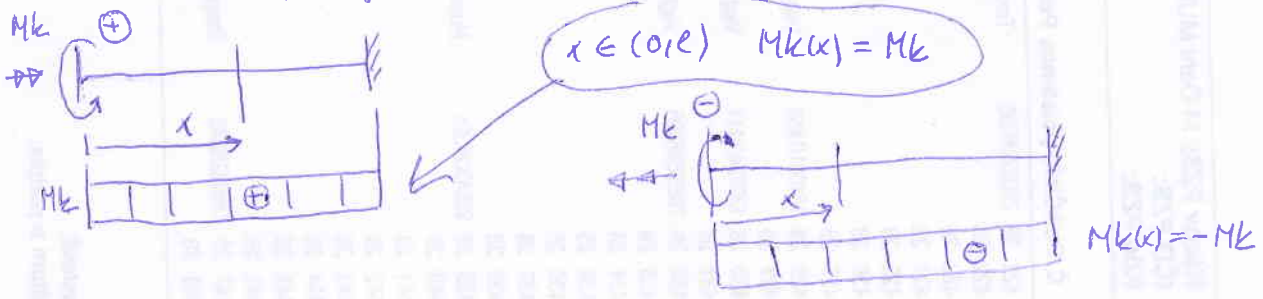
Priebeh krútiacich momentov



Kľukový hriadeľ (4-valec)



Znamienko podľa dohody, alebo jeden moment sa zvolí za kladný a všetky ostatné, ktoré točia v rovnakom smere sú kladné, zvyšné sú záporne.



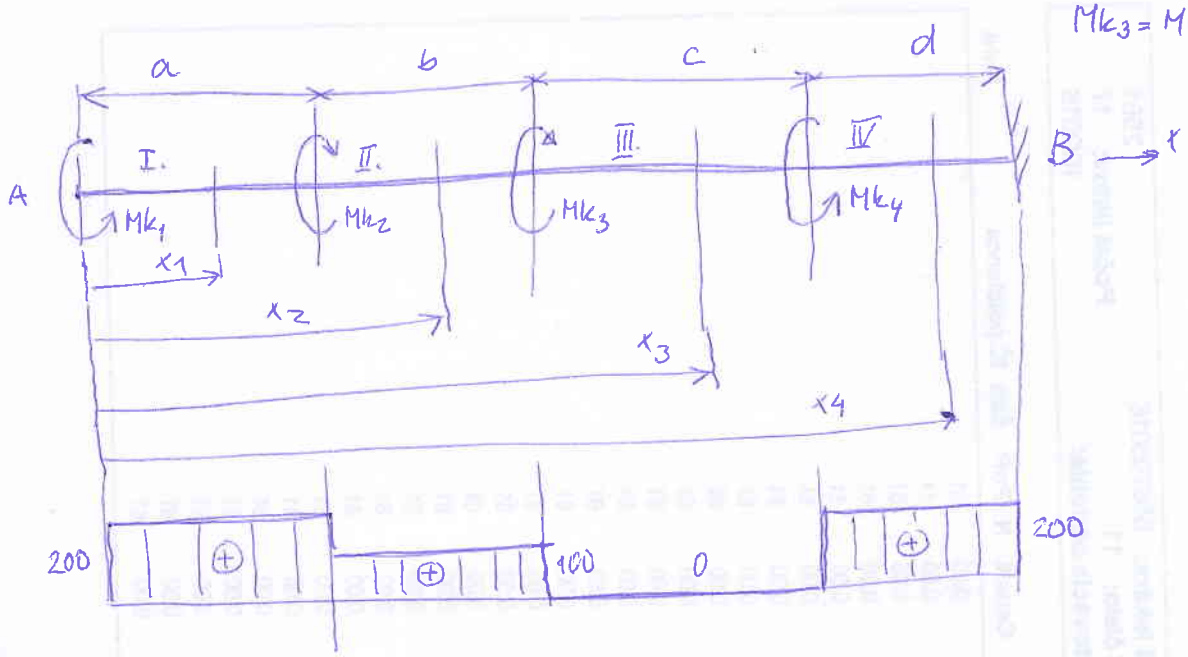
(1)

Priebeh krútiacich momentov $M_k(x)$

Dané: a, b, c, d

$M_{k_1} = M_{k_4} = 200\,Nm$

$M_{k_3} = M_{k_2} = 100\,Nm$



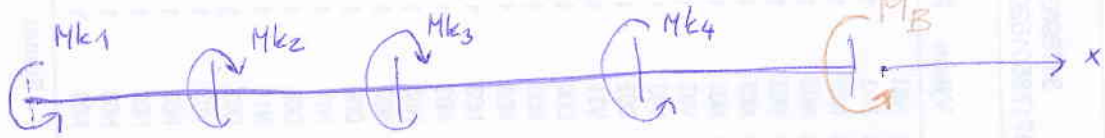
I. $x_1 \in (0, a)$: $M_k(x_1) = +M_{k_1} = 200\,Nm$

II. $x_2 \in (a, a+b)$: $M_k(x_2) = M_{k_1} - M_{k_2} = 200 - 100 = 100\,Nm$

III. $x_3 \in (a+b, a+b+c)$: $M_k(x_3) = M_{k_1} - M_{k_2} - M_{k_3} = 200 - 100 - 100 = 0$

IV. $x_3 \in (a+b+c, l)$ $M_k(x_4) = M_{k_1} - M_{k_2} - M_{k_3} + M_{k_4} = 200\,Nm$

Väzbová reakcia v bode B



$\sum M_{k_i} = 0$: $M_{k_1} - M_{k_2} - M_{k_3} + M_{k_4} + M_B = 0$

$M_B = -200\,Nm$

Celkový uhol skrútenia v bode A:

$$\varphi_A = \frac{M_{k_1} \cdot l}{GI_p} - \frac{M_{k_2}(l-a)}{GI_p} - \frac{M_{k_3}(l-a-b)}{GI_p} + \frac{M_{k_4} \cdot d}{GI_p}$$