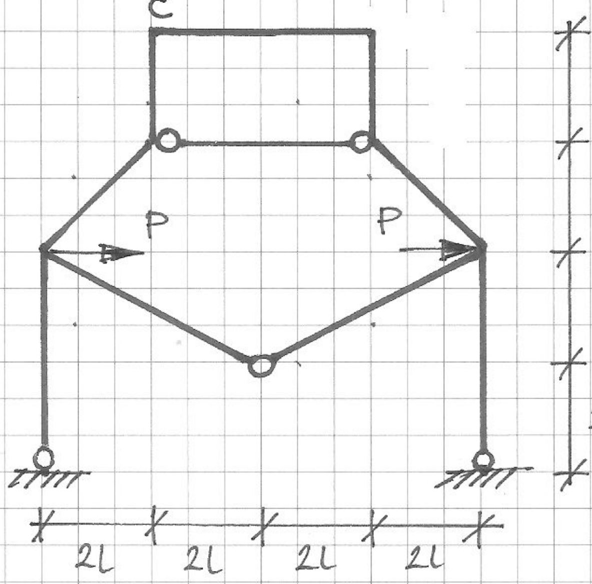
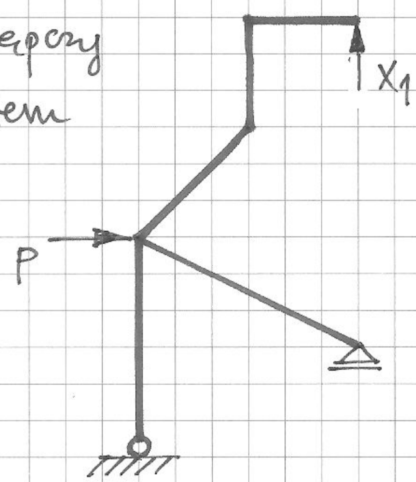
Kolokwium z MK1, 1.3a, r. ak. 2013/14

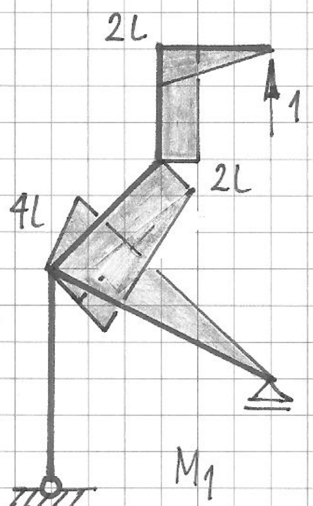
Obliczyć M i u_c. $EJ = \text{const.}$ $EA = \infty$ $(\varepsilon_E = 0)$



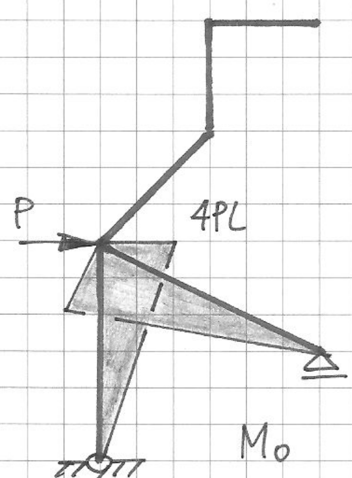
Schemat zastępczy z uwzględnieniem antysymetrii:



$X_1 = 1$



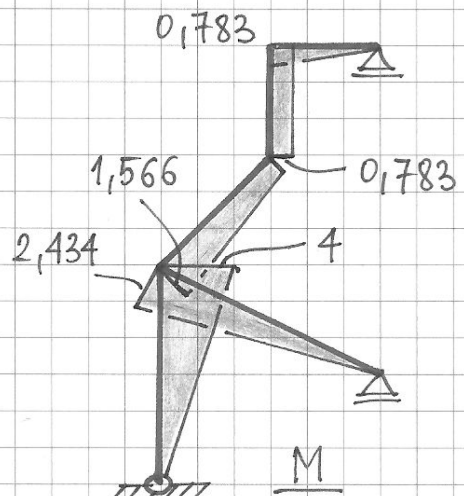
"0"

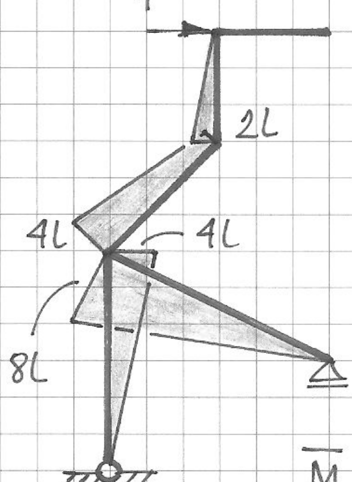


$$\delta_{11} = \frac{8}{3}\left(4 + 7\sqrt{2} + 4\sqrt{5}\right)\frac{L^3}{EJ}$$

$$\delta_{10} = -\frac{32\sqrt{5}}{3}\,\frac{PL^3}{EJ}$$

$$X_1 = 0{,}392\,P$$





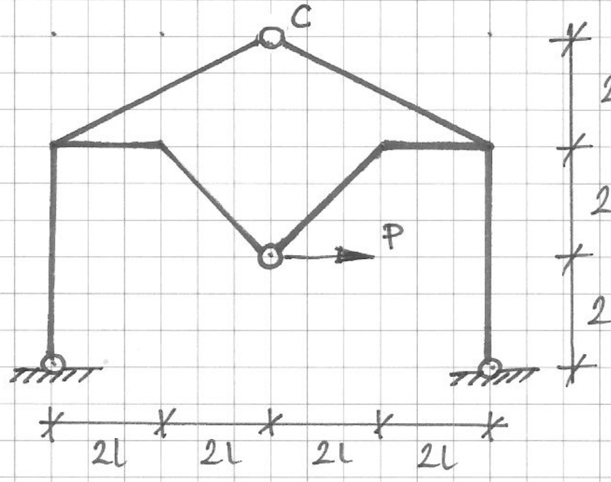
$$u_c = \int_0^L \overline{M}\,\varkappa\,dx = \int_0^L \overline{M}\,\frac{M}{EJ}\,dx = 38{,}456\,\frac{PL^3}{EJ}$$

Uwaga: $\int_0^L \equiv \sum_K \int_0^{L_K}$ (suma po prętach)

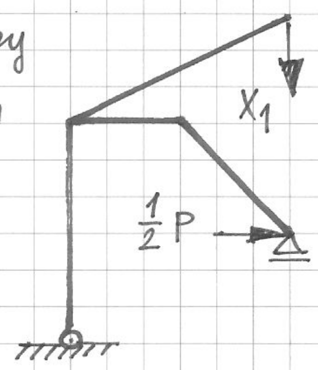
L_K – długość K-tego pręta

Kolokwium z MK1, 1.3b, r. ak. 2013/14

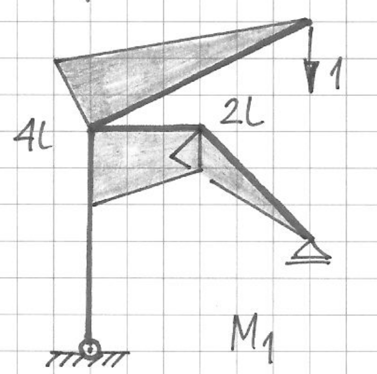
Narysować wykres M i obliczyć u_c. $EJ = \text{const.}$ $EA = \infty$



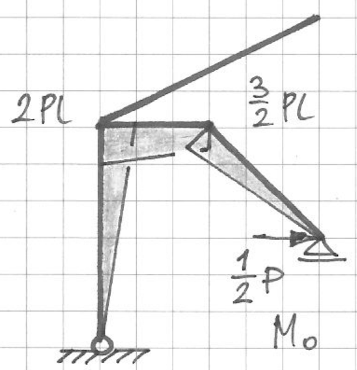
Schemat zastępczy z uwzględnieniem antysymetrii



$X_1 = 1$



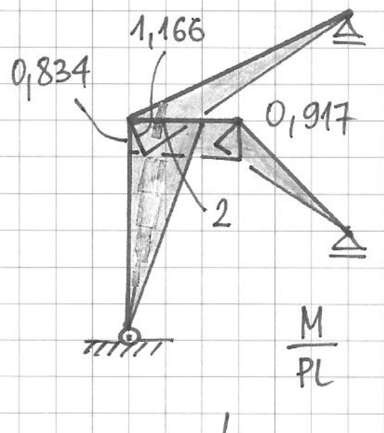
"0"

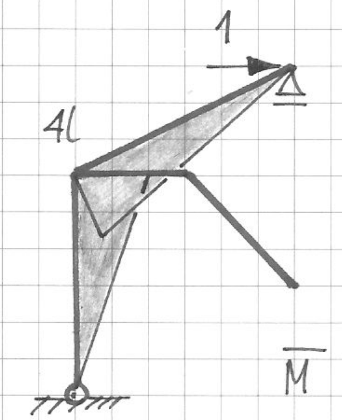


$$\delta_{11} = \frac{8}{3}\left(7 + \sqrt{2} + 4\sqrt{5}\right)\frac{L^3}{EJ}$$

$$\delta_{10} = \frac{2}{3}\left(16 + 3\sqrt{2}\right)\frac{PL^3}{EJ}$$

$$X_1 = -0{,}292\,P$$





$$u_c = \int_0^L \overline{M}\,\varkappa\,dx = \int_0^L \overline{M}\,\frac{M}{EJ}\,dx = 17{,}62\,\frac{PL^3}{EJ}$$

Uwaga: $\int_0^L \equiv \sum_K \int_0^{L_K}$ (suma po prętach) L_K – długość K-tego pręta