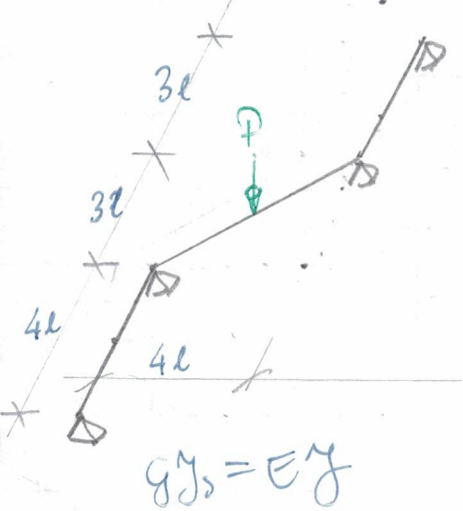
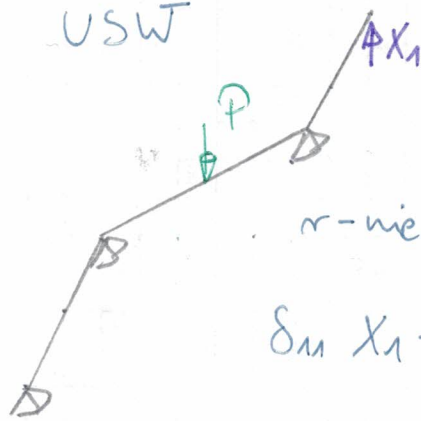


Kolokwium MK KB mst. 9IV 2022



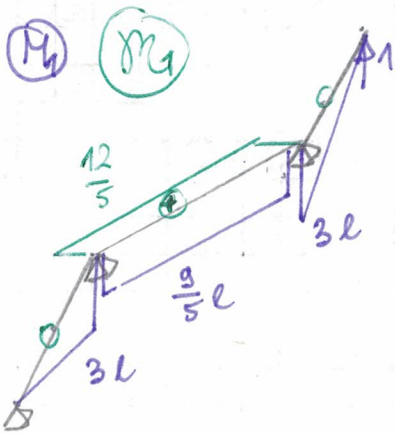
USW



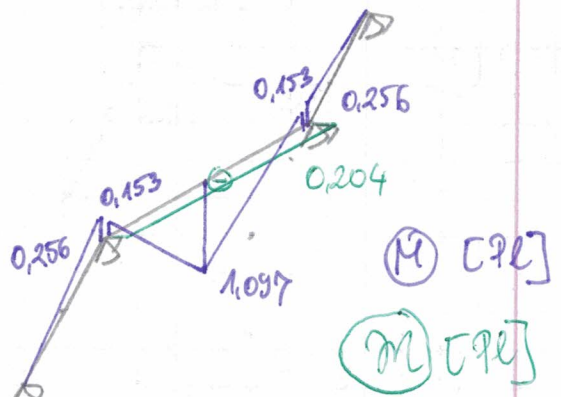
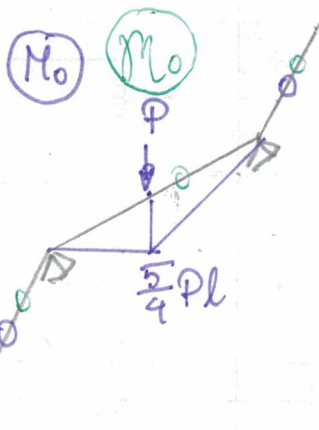
r-nie zgodzili

$$\delta_{11} X_1 + \delta_{10} = 0$$

Stan  $X_1 = 1$



Stan  $\epsilon_0$

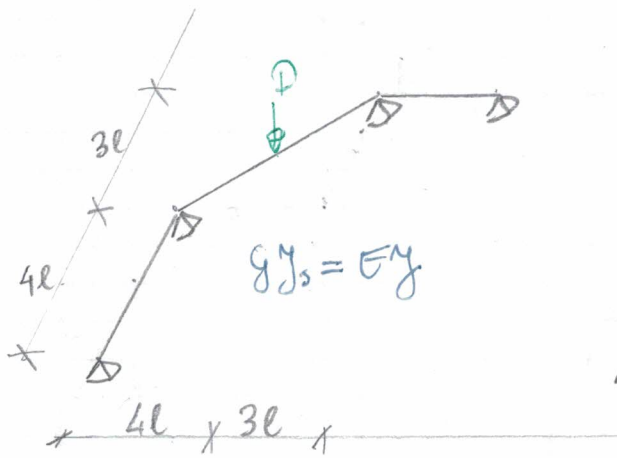


$M$  [9l]  
 $M$  [9l]

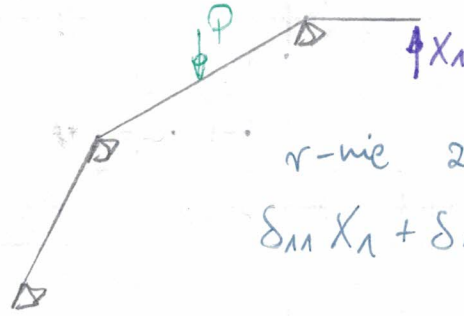
$$\delta_{11} = \frac{1}{EI} \left[ \frac{1}{2} 3l \cdot 3l \cdot \frac{2}{3} 3l + \frac{1}{2} 3l \cdot 4l \cdot \frac{2}{3} 3l + \frac{12}{5} l \cdot 5l \cdot \frac{12}{5} l + \frac{9}{5} l \cdot 5l \cdot \frac{9}{5} l \right] = 66 \frac{l^3}{EI}$$

$$\delta_{10} = \frac{1}{EI} \left[ 2 \cdot \frac{1}{2} \frac{5}{4} Pl \cdot \frac{5}{2} l \cdot \frac{9}{5} l \right] = 5,625 \frac{Pl^3}{EI}$$

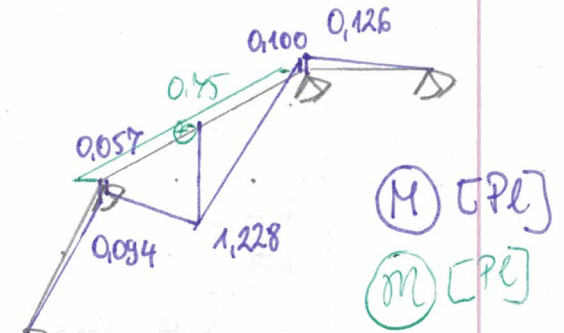
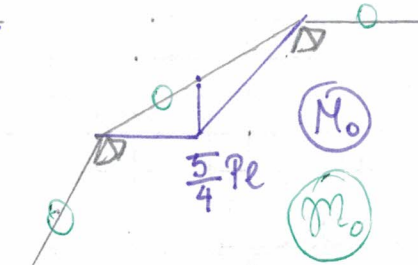
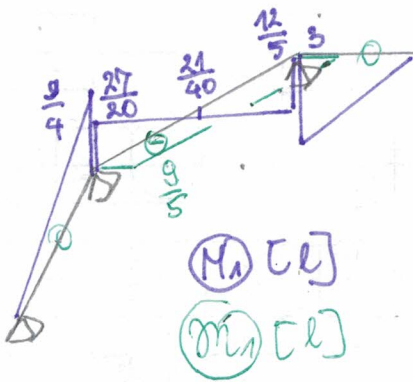
$$X_1 = - \frac{\delta_{10}}{\delta_{11}} = -0,0852 P$$



USW



r-nie zgodności  
 $\delta_{11} X_1 + \delta_{10} = 0$



$$\delta_{11} = \frac{1}{EY} \left[ \frac{1}{2} \cdot \frac{9}{4} l \cdot 4l \cdot \frac{2}{3} \frac{9}{4} l + \frac{1}{2} \frac{27}{20} l \cdot 5l \cdot \left( \frac{2}{3} \frac{27}{20} l - \frac{1}{3} \frac{12}{5} l \right) + \frac{1}{2} \frac{12}{5} l \cdot 5l \left( \frac{2}{3} \frac{12}{5} l - \frac{1}{3} \frac{27}{20} l \right) + \frac{1}{2} 3l \cdot 3l \cdot \frac{2}{3} 3l + \frac{9}{5} l \cdot 5l \cdot \frac{9}{3} l \right] = 39,188 \frac{l^3}{EY}$$

$$\delta_{10} = \frac{1}{EY} \left[ \frac{1}{2} \cdot \frac{5}{4} Pl \cdot \frac{5}{2} l \left( -\frac{1}{3} \frac{27}{20} l + \frac{2}{3} \frac{21}{40} l \right) + \frac{1}{2} \frac{5}{4} Pl \cdot \frac{5}{2} l \cdot \left( \frac{2}{3} \frac{21}{40} l + \frac{1}{3} \frac{12}{5} l \right) \right] = 1,64 \frac{Pl^3}{EY}$$

$$X_1 = - \frac{\delta_{10}}{\delta_{11}} = - 0,0419 P$$