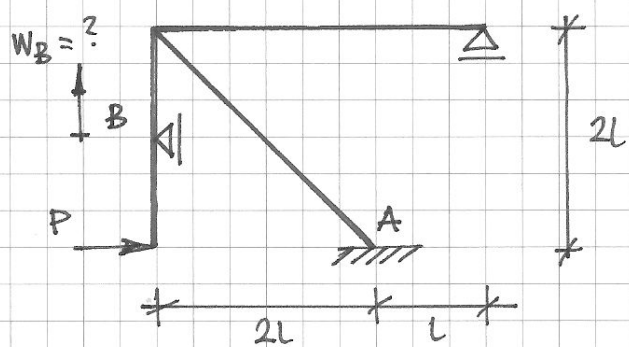
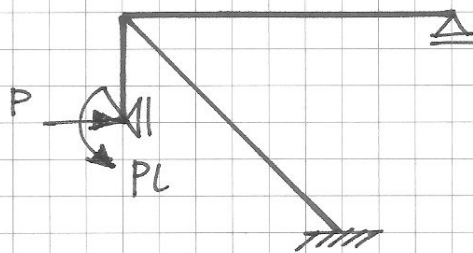


Obliczyć moment M_A i przemieszczenie w_B $EJ = \text{const.}$

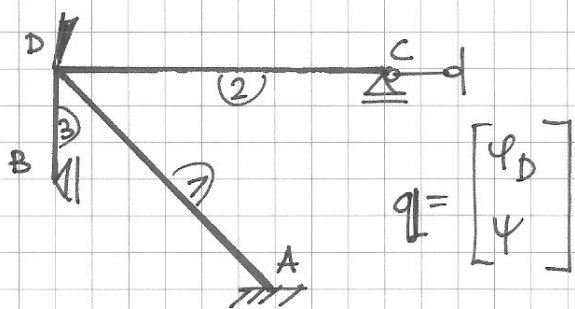
$$EA = \infty$$



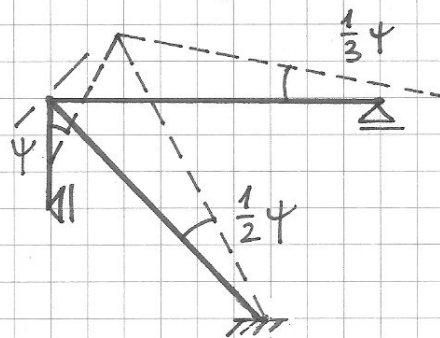
Schemat zredukowany:



Schemat geometrycznie wyznaczalny:



Plan przesunięć:



Równania równowagi:

$$\Phi_D^{(1)} + \Phi_D^{(2)} + \Phi_D^{(3)} = 0$$

$$[\Phi_A^{(1)} + \Phi_D^{(1)}] \cdot \frac{1}{2} \bar{\psi} + \Phi_D^{(2)} \cdot \frac{1}{3} \bar{\psi} + \Phi_D^{(3)} \cdot \bar{\psi} + \bar{L} \psi = 0$$

$$\bar{L} \psi = -PL \cdot \bar{\psi}$$

Wzory transformacyjne:

$$\Phi_A^{(1)} = \frac{2EJ}{2\sqrt{2}L} \left[\varphi_D - \frac{3}{2} \psi \right] = 0,945 PL$$

$$\Phi_D^{(1)} = \frac{2EJ}{2\sqrt{2}L} \left[2\varphi_D - \frac{3}{2} \psi \right] = -0,027 PL$$

$$\Phi_D^{(2)} = \frac{3EJ}{3L} \left[\varphi_D - \frac{1}{3} \psi \right] = -0,772 PL$$

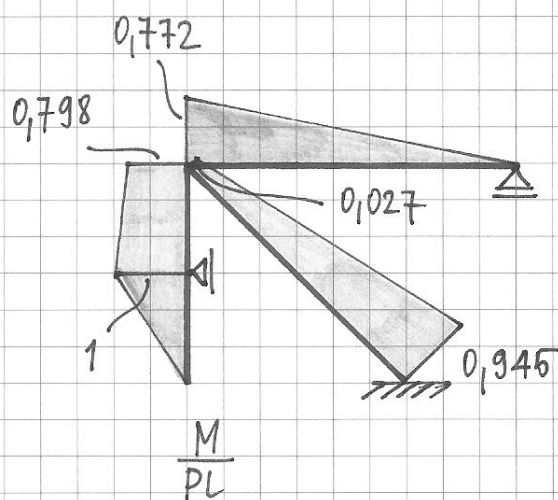
$$\Phi_D^{(3)} = \frac{3EJ}{L} \left[\varphi_D - \psi \right] - \frac{1}{2} PL = 0,798 PL$$

$$\varphi_D = -1,374 \frac{PL^2}{EJ}$$

$$\psi = -1,806 \frac{PL^2}{EJ}$$

Przemieszczenie w_B :

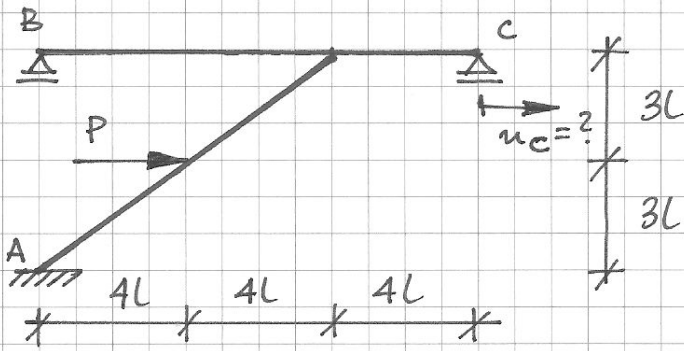
$$w_B = \frac{1}{2} \psi \cdot 2L = 1,806 \frac{PL^3}{EJ}$$



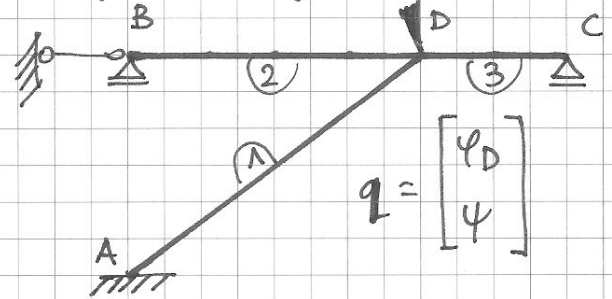
MK1 kolokwium 2.2b, r. ak. 2014/2015

Obliczyć moment M_A i przemieszczenie u_c $EJ = \text{const.}$

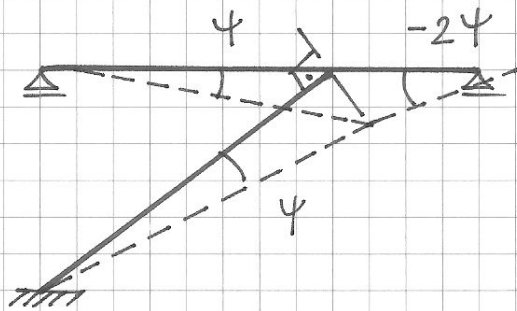
$$EA = \infty$$



Schemat geometrycznie wyznaczalmy:



Plan przesunięć:



Równania równowagi:

$$\Phi_D^{(1)} + \Phi_D^{(2)} + \Phi_D^{(3)} = 0$$

$$[\Phi_A^{(1)} + \Phi_D^{(1)}] \cdot \bar{\psi} + \Phi_D^{(2)} \cdot \bar{\psi} + \Phi_D^{(3)} \cdot (-2\bar{\psi}) + \bar{L}_\psi = 0$$

$$\bar{L}_\psi = P \cdot 3L \cdot \bar{\psi}$$

Wzory transformacyjne:

$$\Phi_A^{(1)} = \frac{2EJ}{10L} [\varphi_D - 3\psi] - \frac{3}{4} PL = -1,344 PL$$

$$\Phi_D^{(1)} = \frac{2EJ}{10L} [2\varphi_D - 3\psi] + \frac{3}{4} PL = 0,006 PL$$

$$\Phi_D^{(2)} = \frac{3EJ}{8L} [\varphi_D - \psi] = -0,558 PL$$

$$\Phi_D^{(3)} = \frac{3EJ}{4L} [\varphi_D + 2\psi] = 0,552 PL$$

$$\varphi_D = -0,747 \frac{PL^2}{EJ}$$

$$\psi = 0,741 \frac{PL^2}{EJ}$$

$$u_c = \psi \cdot 6L = 4,449 \frac{PL^3}{EJ}$$

