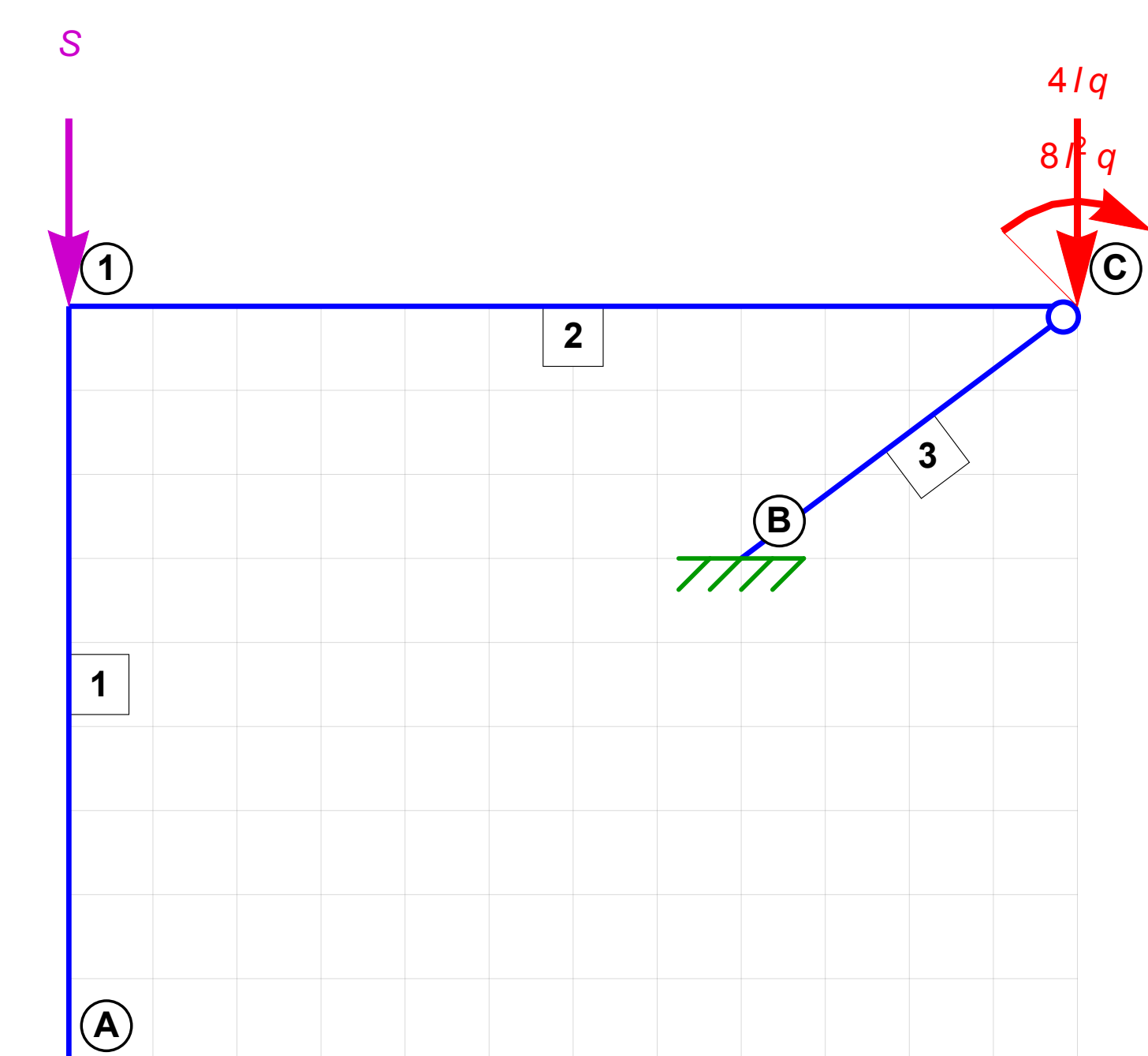
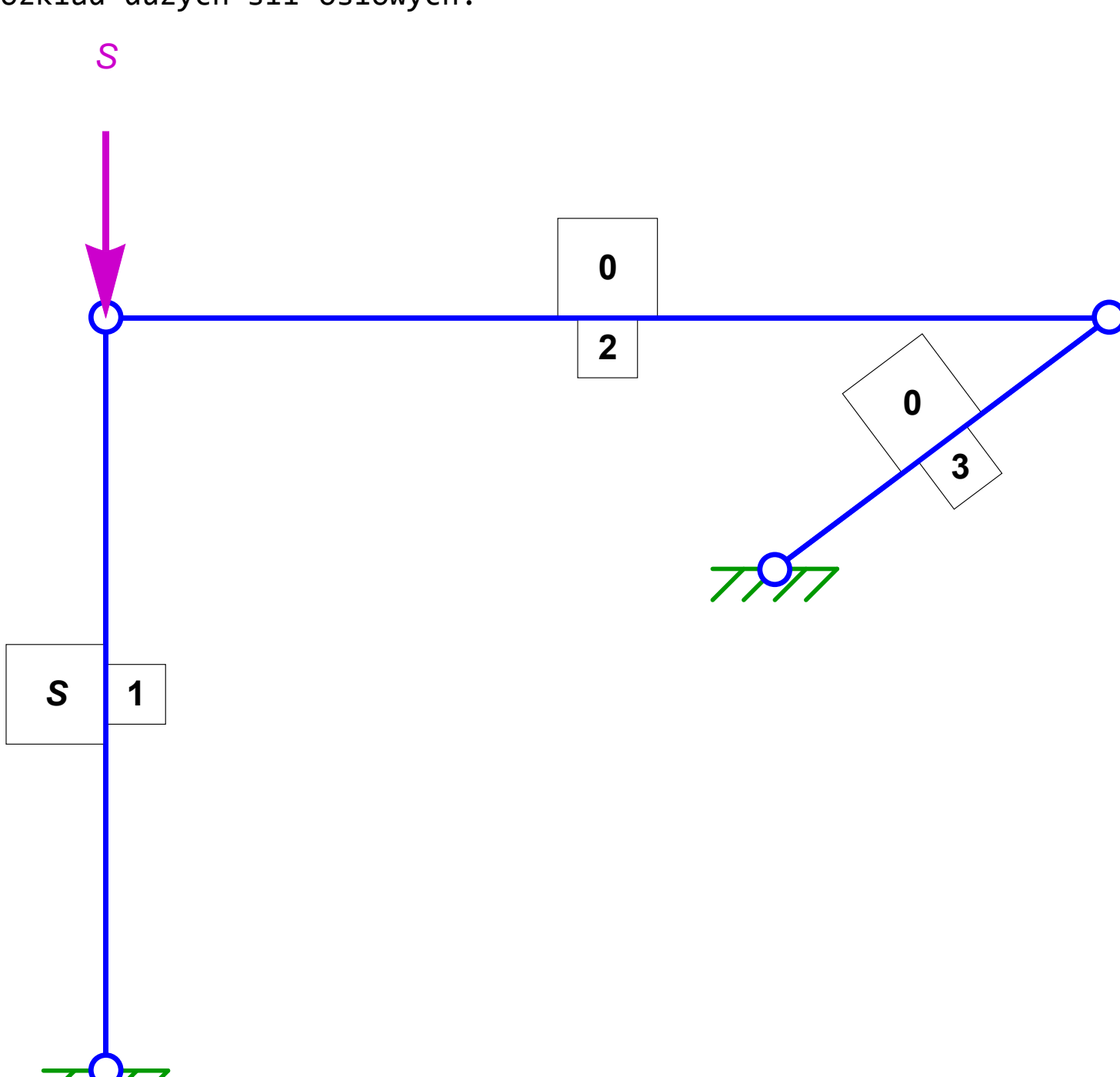


Geometria oraz obciążenia konstrukcji (wymiar oczka siatki - 1,  $S = \frac{1}{36} \frac{EJ}{l^2}$ ):



Rozkład dużych sił osiowych:



Parametry  $\sigma$  w prętach:

$$\sigma^{(1)} = \frac{3}{2}$$

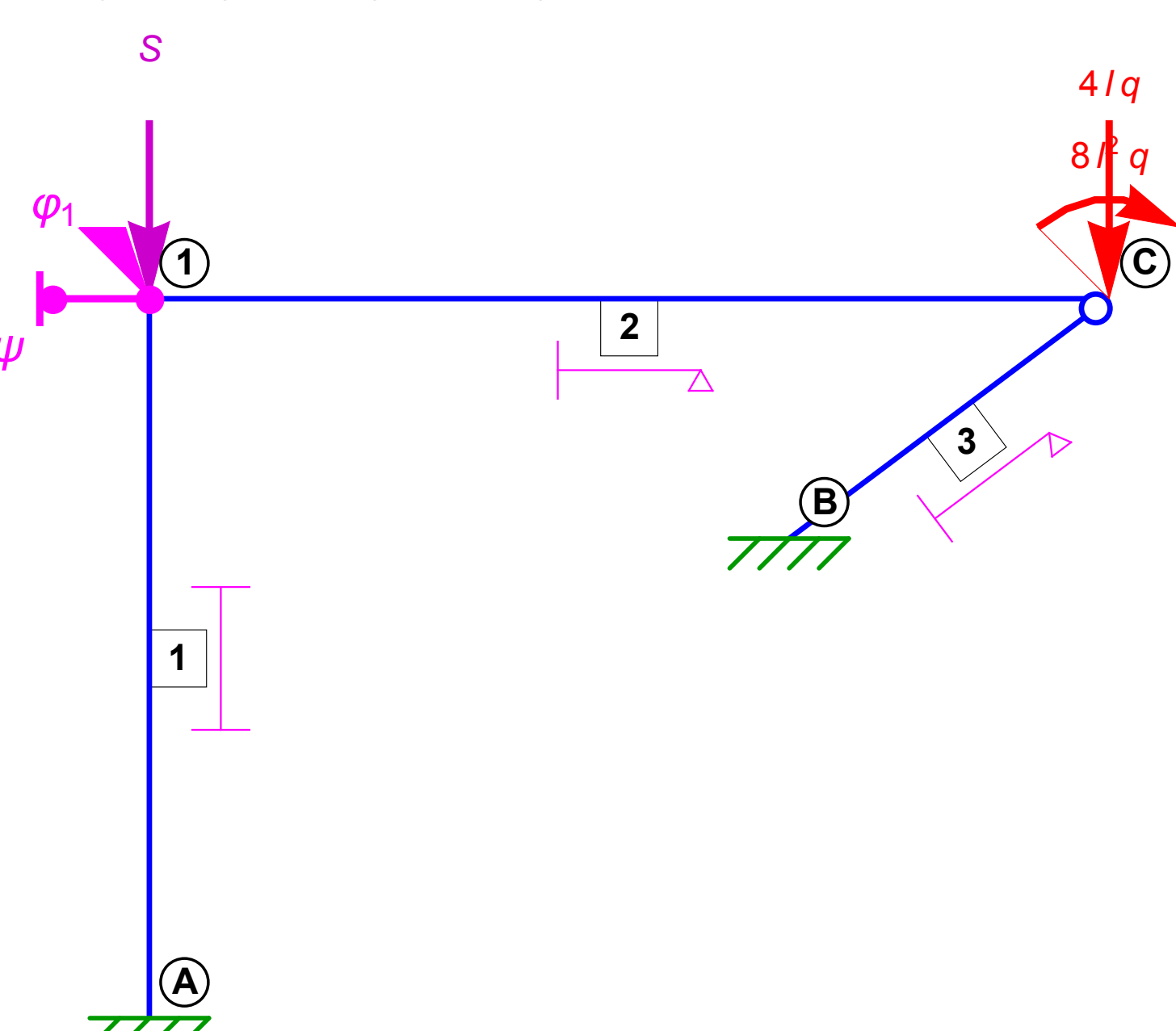
$$\sigma^{(2)} = 0$$

$$\sigma^{(3)} = 0$$

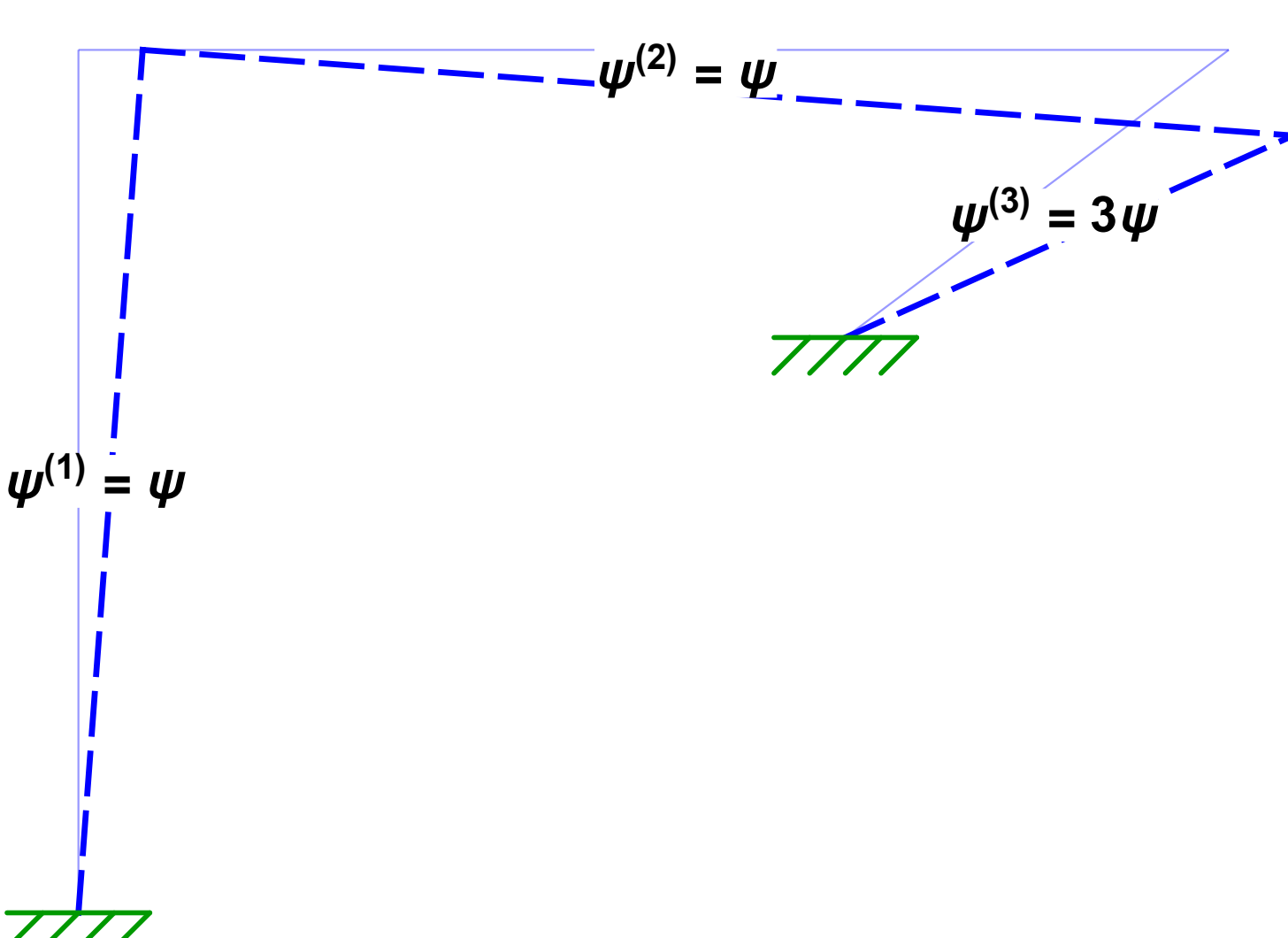
Wektor niewiadomych:

$$\mathbf{q} = \begin{pmatrix} \varphi_1 \\ \psi \end{pmatrix}$$

Układ geometrycznie wyznaczalny:



Plan przemieszczeń:



$$\psi^{(1)} = \psi$$

$$\psi^{(2)} = \psi$$

$$\psi^{(3)} = 3\psi$$

Momenty wyjściowe:

$$\Phi_1^0 = 4 l^2 q$$

Wzory transformacyjne:

$$\Phi_A^1 = \frac{EJ}{l} \left[ \frac{1}{9} \beta \left( \frac{3}{2} \right) \varphi_1 - \frac{1}{9} \vartheta \left( \frac{3}{2} \right) \psi \right] = \frac{EJ}{l} [ 0.231 \varphi_1 - 0.641 \psi ]$$

$$\Phi_B^1 = \frac{EJ}{l} \left[ \frac{1}{9} \alpha \left( \frac{3}{2} \right) \varphi_1 - \frac{1}{9} \vartheta \left( \frac{3}{2} \right) \psi \right] = \frac{EJ}{l} [ 0.410 \varphi_1 - 0.641 \psi ]$$

$$\Phi_C^2 = \frac{EJ}{l} \left[ \frac{1}{4} \varphi_1 - \frac{1}{4} \psi \right] + 4 l^2 q$$

$$\Phi_B^3 = \frac{EJ}{l} \left[ -\frac{9}{5} \psi \right]$$

Równania równowagi:

$$\Phi_A^1 + \Phi_C^2 = 0$$

$$(\Phi_A^1 + \Phi_B^1) \bar{\psi} + \Phi_C^2 \cdot \bar{\psi} + \Phi_B^3 \cdot 3 \bar{\psi} + \frac{1}{36} \frac{EJ}{l^2} \cdot 9 l \cdot \psi \cdot \bar{\psi} + 4 l q \cdot 12 l \bar{\psi} + 8 l^2 q \cdot \bar{\psi} = 0$$

$$\frac{EJ}{l} \begin{pmatrix} 0.660 & -0.891 \\ -0.891 & 6.683 \end{pmatrix} \begin{pmatrix} \varphi_1 \\ \psi \end{pmatrix} = l^2 q \begin{pmatrix} -4.000 \\ 60.000 \end{pmatrix}$$

Rozwiązanie metody przemieszczeń:

$$\mathbf{q} = \begin{pmatrix} \varphi_1 \\ \psi \end{pmatrix} = \frac{l^3 q}{EJ} \begin{pmatrix} 7.395 \\ 9.965 \end{pmatrix}$$

Momenty brzegowe:

$$\Phi_A^1 = -4.681 l^2 q$$

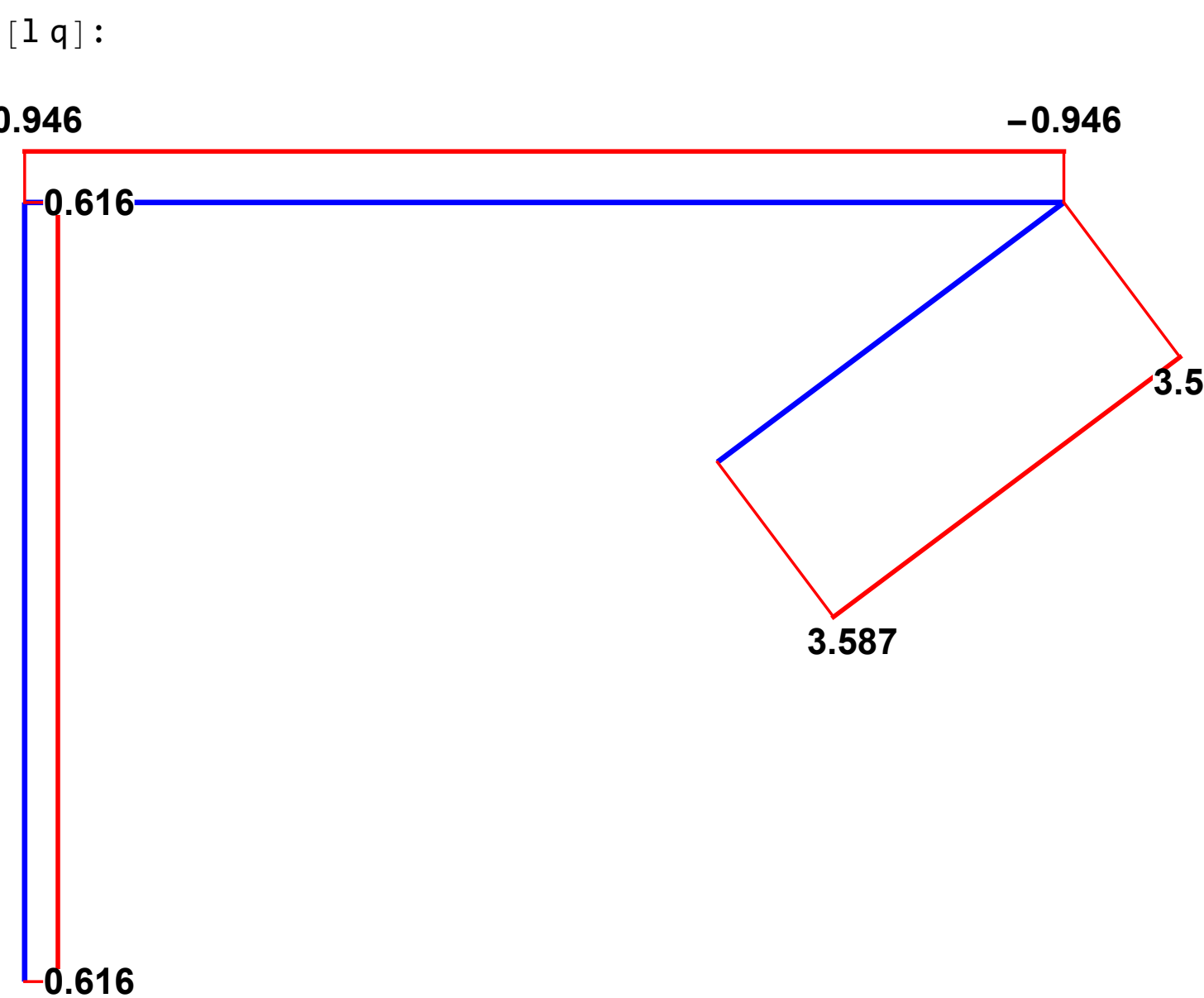
$$\Phi_B^1 = -3.358 l^2 q$$

$$\Phi_C^2 = 3.358 l^2 q$$

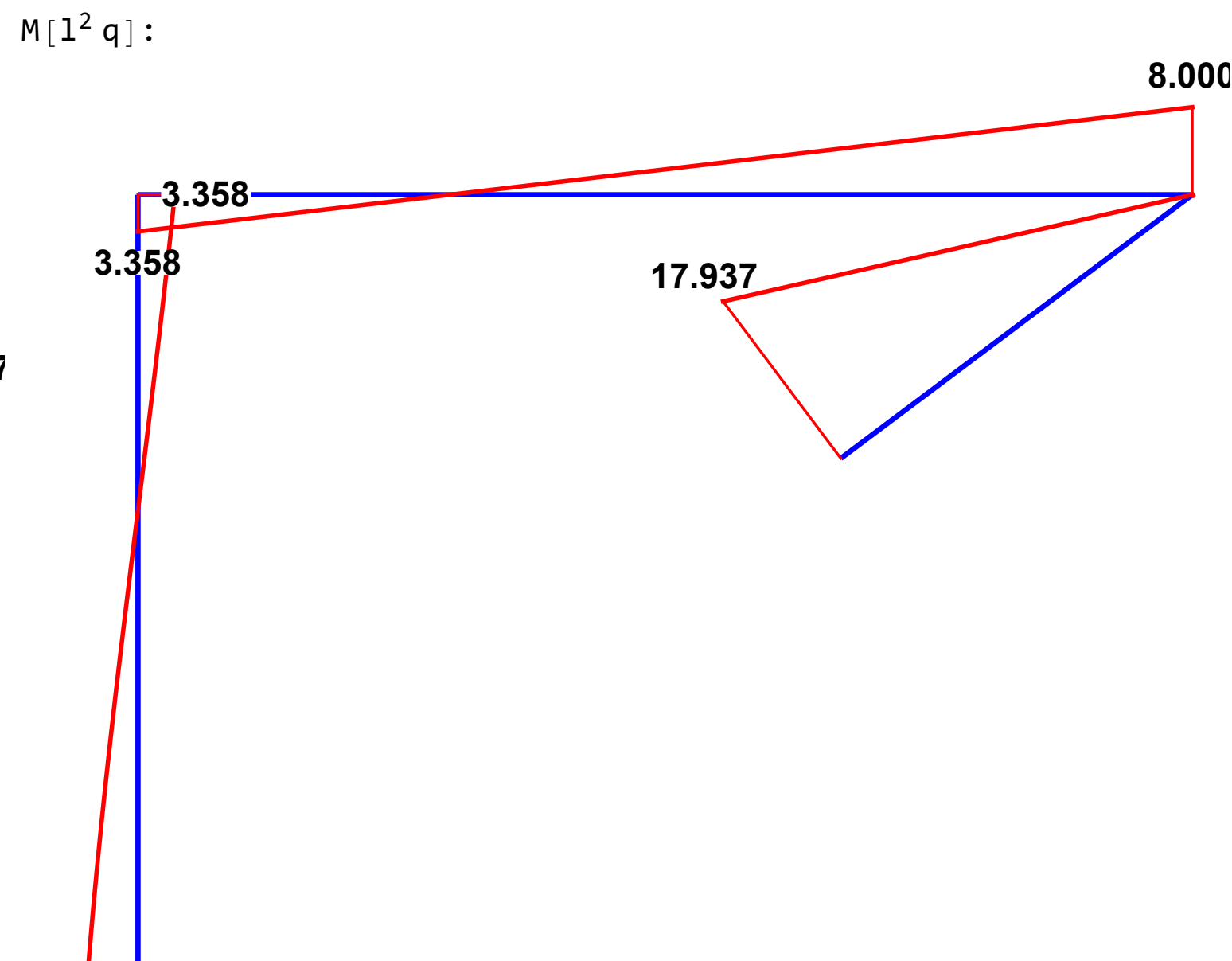
$$\Phi_B^3 = -17.937 l^2 q$$

Wykresy sił wewnętrznych:

T [l q]:



M [l^2 q]:



Deformacja konstrukcji:

