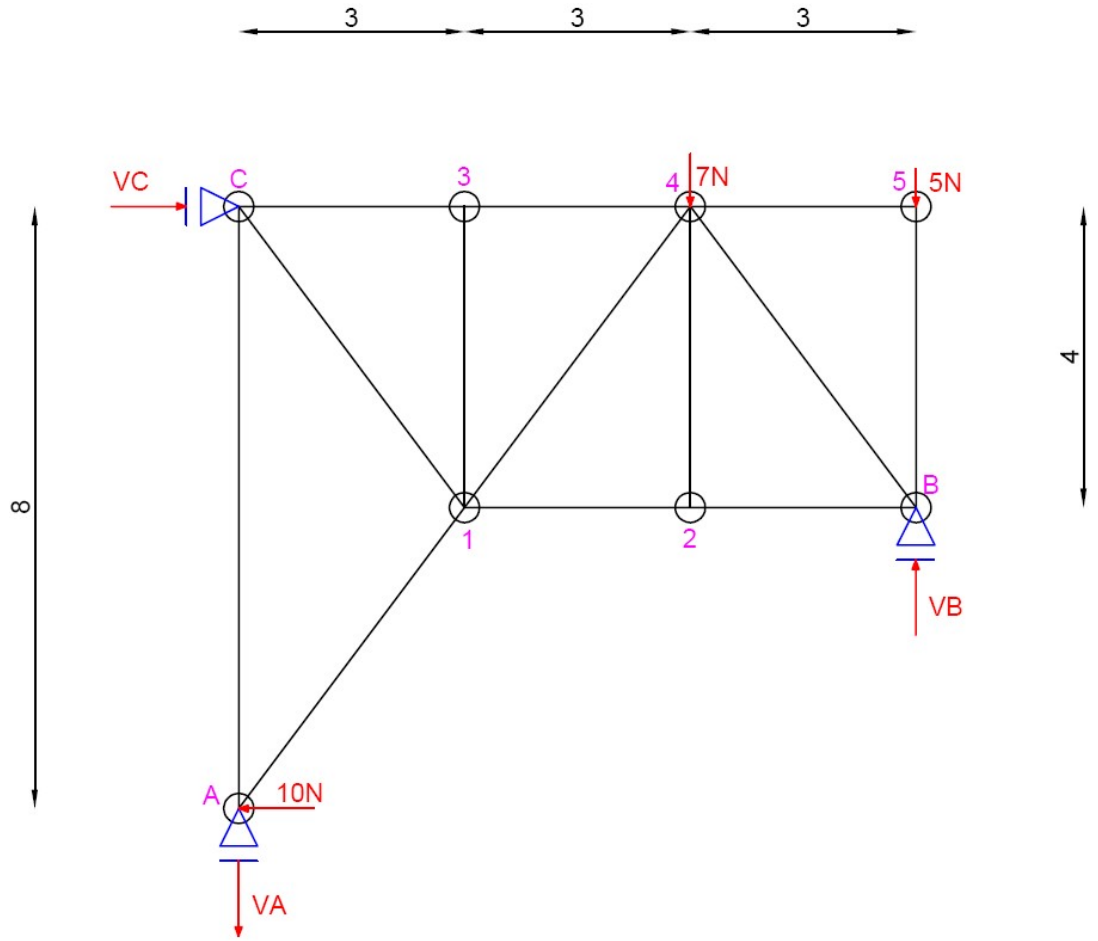
1. Przykład



1.2 Równania równowagi

$$\sum X = 0$$

$$VC - 10 = 0$$

$$VC = 10[N]$$

$$\sum MA = 0$$

$$-VC * 8 - 7 * 6 - 5 * 9 + VB * 9 = 0$$

$$-10 * 8 - 7 * 6 - 5 * 9 + VB * 9 = 0$$

$$VB = \frac{167[N]}{9}$$

$$\sum Y = 0$$

$$-7 - 5 + VB + VA = 0$$

$$-7 - 5 + \frac{167}{9} + VA = 0$$

$$VA = \frac{-59[N]}{9}$$

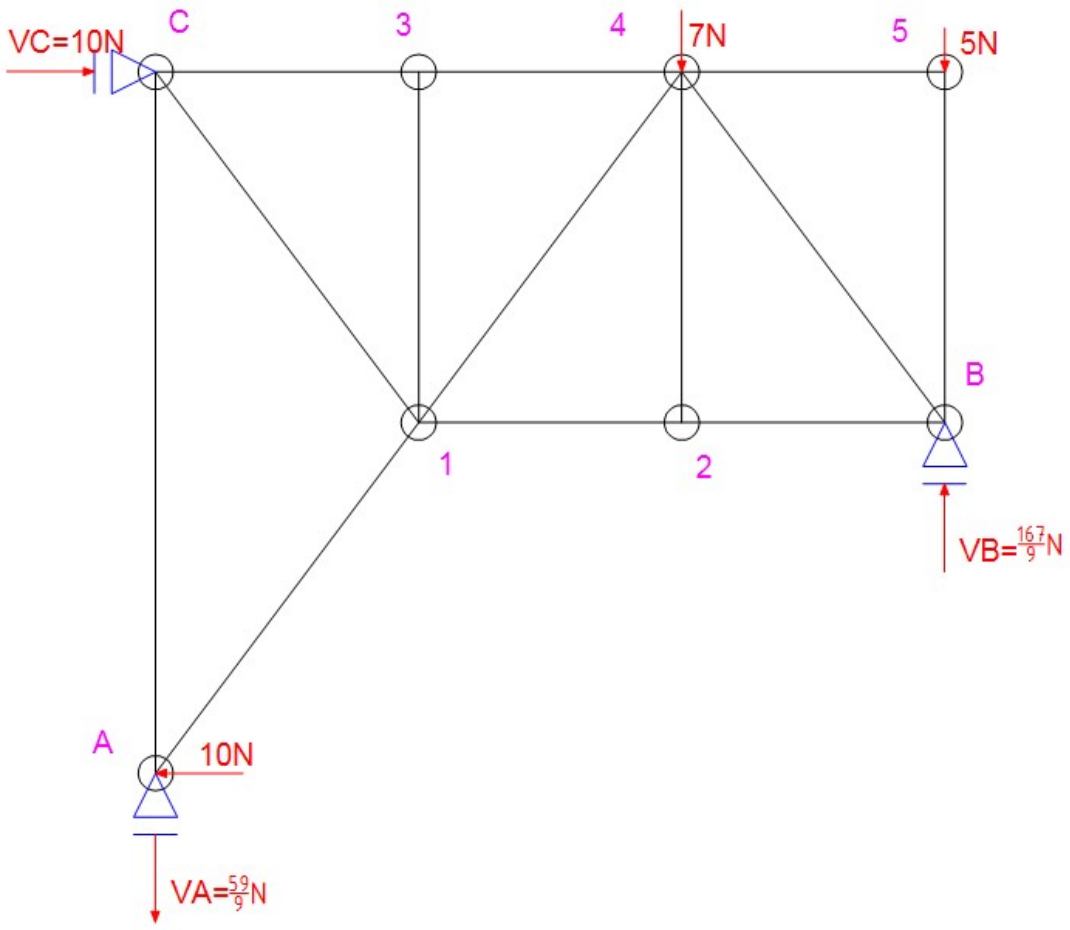
Sprawdzenie:

$$\sum M1 = 0$$

$$-VC * 4 - 10 * 4 - 7 * 3 - 5 * 6 + VB * 6 - VA * 3 = 0$$

$$-10 * 4 - 40 - 7 * 3 - 5 * 6 + \frac{167}{9} * 6 + \frac{59}{9} * 3 = 0$$

0=0



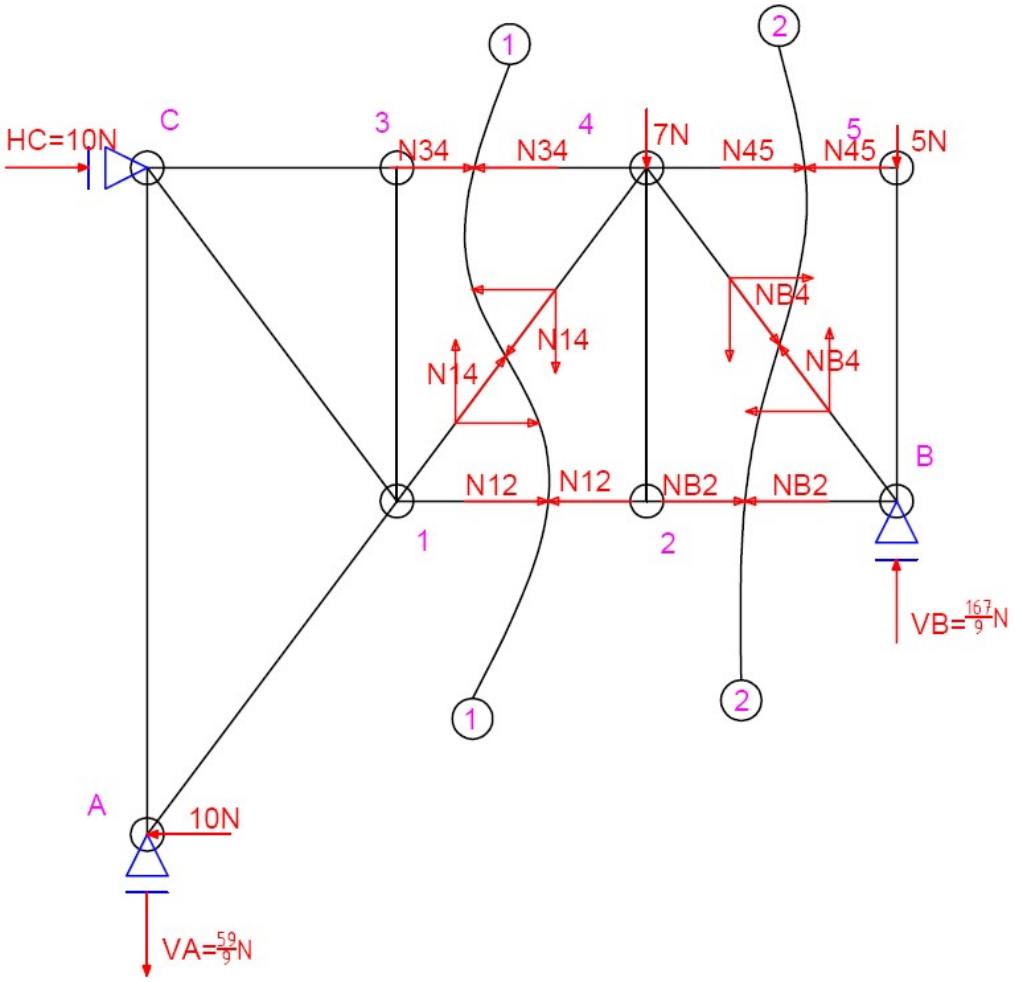
2.Metoda Rittera

2.1 Wyznaczanie wartości sił.

$sina = \frac{4}{5}$

$cosa = \frac{3}{5}$

Przecięcie I



Siła N34

$$\sum M1^L = 0$$

$$-4 * VC - N34 * 4 - 10 * 4 + VA * 3 = 0$$

$$-4 * 10 - 40 + \frac{59}{3} = N34 * 4$$

$$\frac{-181}{3} = N34 * 4$$

$$N34 = -15{,}083[N]$$

$$\sum M1^P = 0$$

$$-7 * 3 \mp N34 * 4 - 5 * 6 + VA * 6 = 0$$
$$-7 * 3 \mp N34 * 4 - 5 * 6 + \frac{167}{9} * 6 = 0$$
$$\frac{-181}{3} = N34 * 4$$
$$N34 = -15{,}083[N]$$

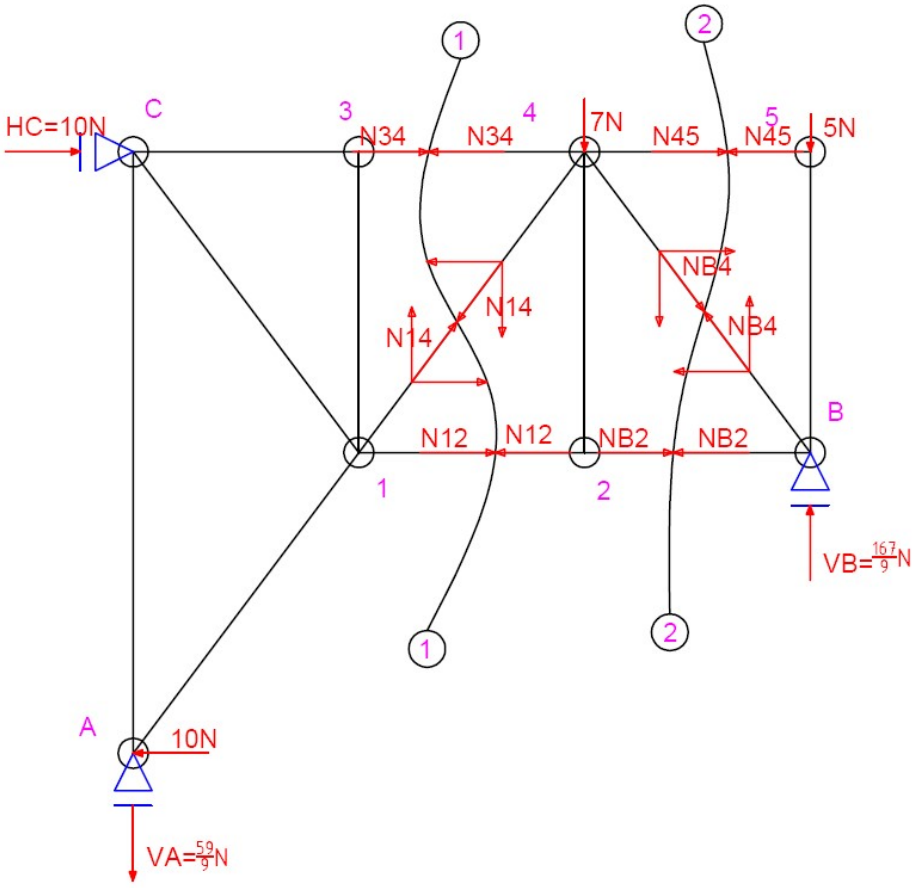
Siła N12

$$\sum M4^{p} = 0$$
$$-N12 * 4 - 5 * 3 + VB * 3 = 0$$
$$N12 * 4 = -15 + \frac{167}{3}$$
$$N12 = 10{,}166[N]$$
$$\sum M4^{L} = 0$$
$$N12 * 4 - 10 * 8 + VA * 6 = 0$$
$$N12 * 4 - 10 * 8 + \frac{59}{9} * 6 = 0$$
$$N12 = 10{,}166[N]$$

Siła N14

$$\sum X^{P} = 0$$
$$-\sin(a) * N14 \mp \frac{167}{9} - 12 = 0$$
$$\frac{4}{5} N14 = \frac{59}{9}$$
$$N14 = 8{,}194[N]$$
$$\sum X^{L} = 0$$
$$\sin(a) * N14 - \frac{59}{9} = 0$$
$$\frac{4}{5} N14 = \frac{59}{9}$$
$$N14 = 8{,}194[N]$$

Przecięcie II



Siła N45

$$\sum MB^P = 0$$
$$N45 * 4 = 0$$
$$N45 = 0$$
$$\sum MB^L = 0$$
$$-N45 * 4 + 7 * 3 - 10 * 4 - 10 * 4 + \frac{59}{9} * 9 = 0$$
$$N45 = 0$$

Siła NB2

$$\sum M4^P = 0$$
$$-NB2 * 4 - 5 * 3 + \frac{167}{9} * 3 = 0$$
$$NB2 * 4 = \frac{122}{3}$$
$$NB2 = \frac{61}{6} = 10{,}166[N]$$
$$\sum M4^L = 0$$

$$NB2 * 4 + 10 * 8 - \frac{59}{9} * 6 = 0$$

$$NB2 * 4 = \frac{122}{3}$$

$$NB2 = \frac{61}{6} = 10{,}166[N]$$

Siła NB2

$$\sum Y^P = 0$$

$$Sin(a) * NB4 + \frac{167}{9} - 5 = 0$$

$$NB4 = -\frac{305}{18} = -16{,}944[N]$$

$$\sum Y^L = 0$$

$$-Sin(a) * NB4 - \frac{59}{9} - 7 = 0$$

$$NB4 = -\frac{610}{36} = -16{,}944[N]$$