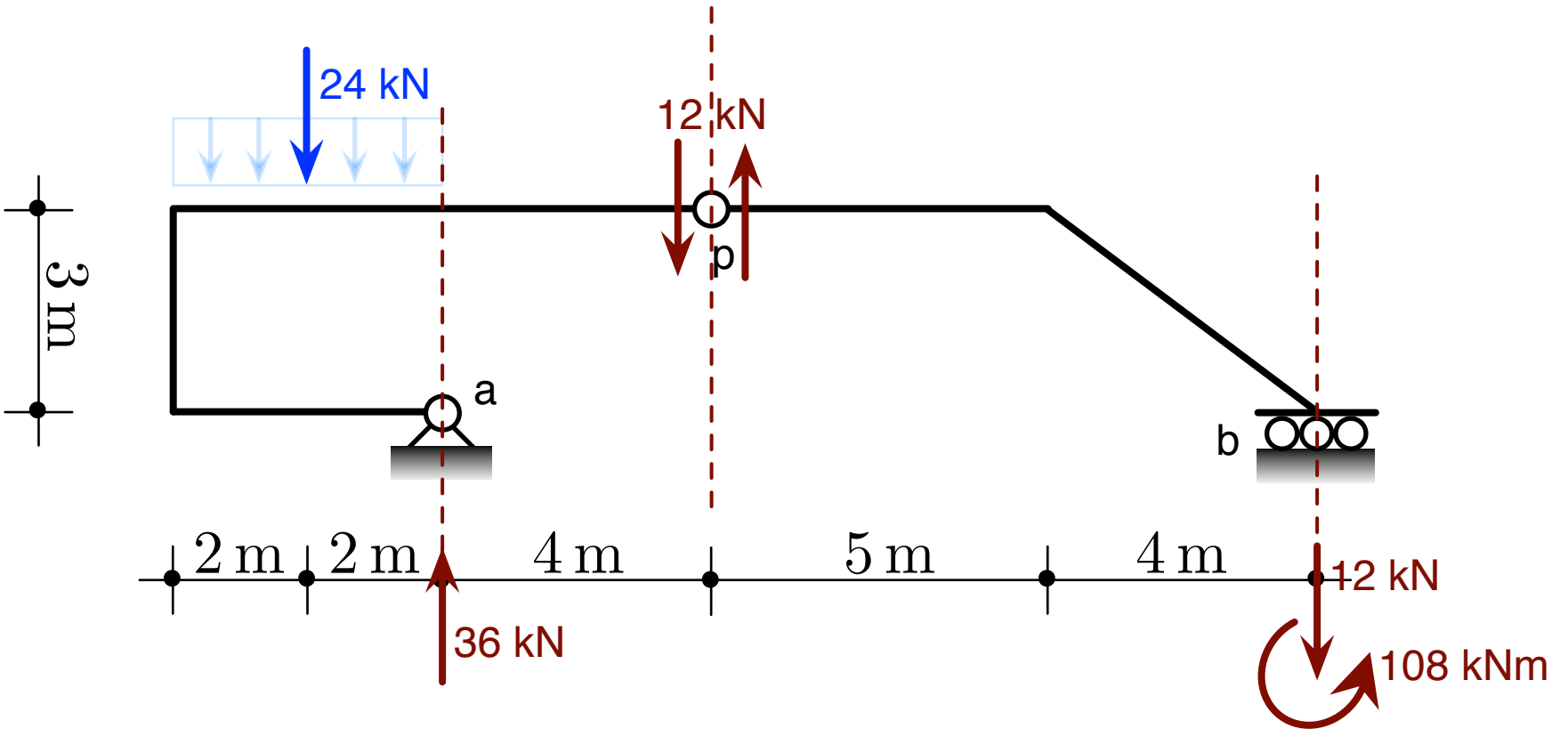
SCHEMA 0: reazioni vincolari



1. EQL corpo p-b:
   2forze+1momento

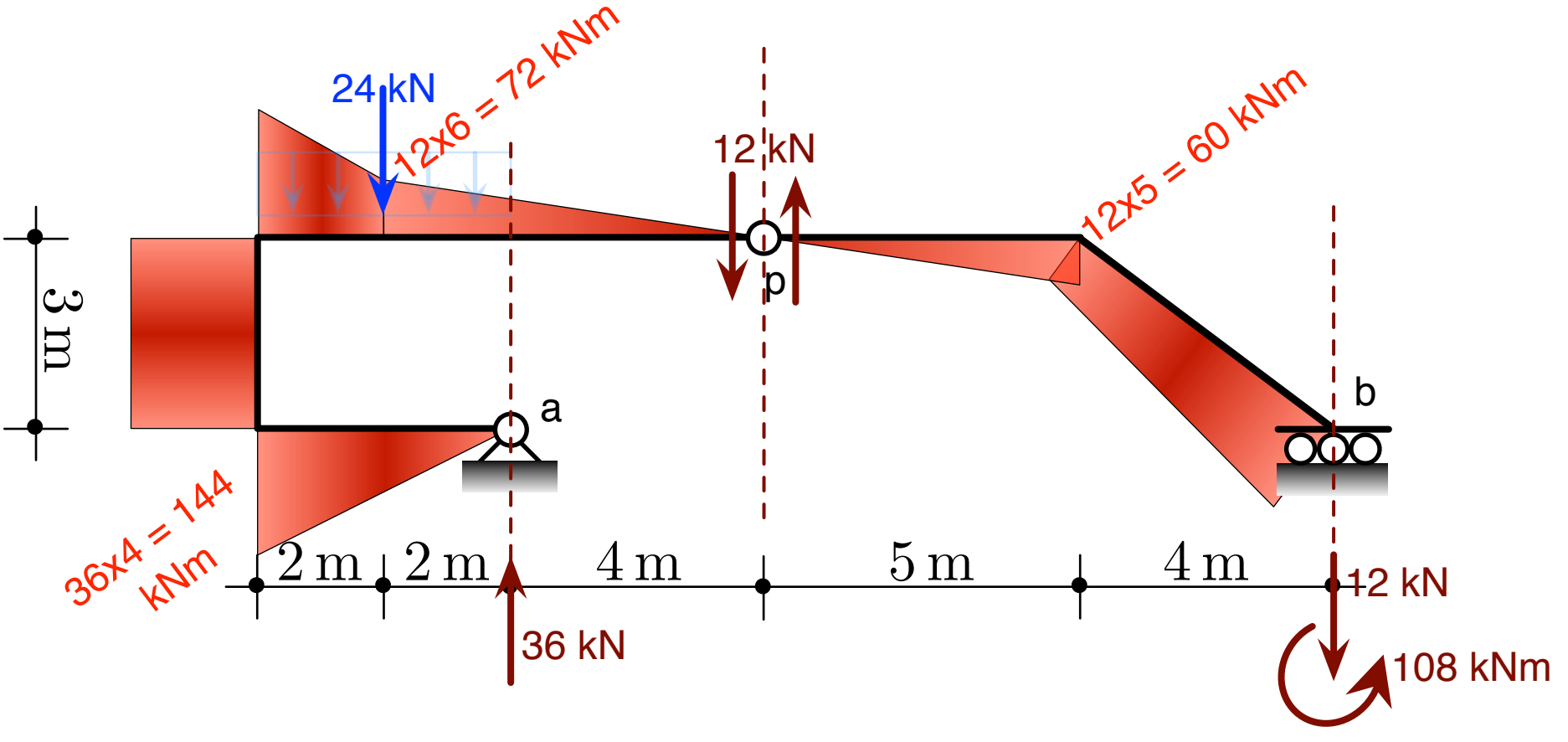
$$R_m(b) = R_v(p) \times 9$$

2. EQL corpo a-b:
   3forze parallele

$$\sum_a M = 0 \rightarrow 24 \times 2 = R_v(p) \times 4 \rightarrow R_v(p) = 12\,\text{kN}$$

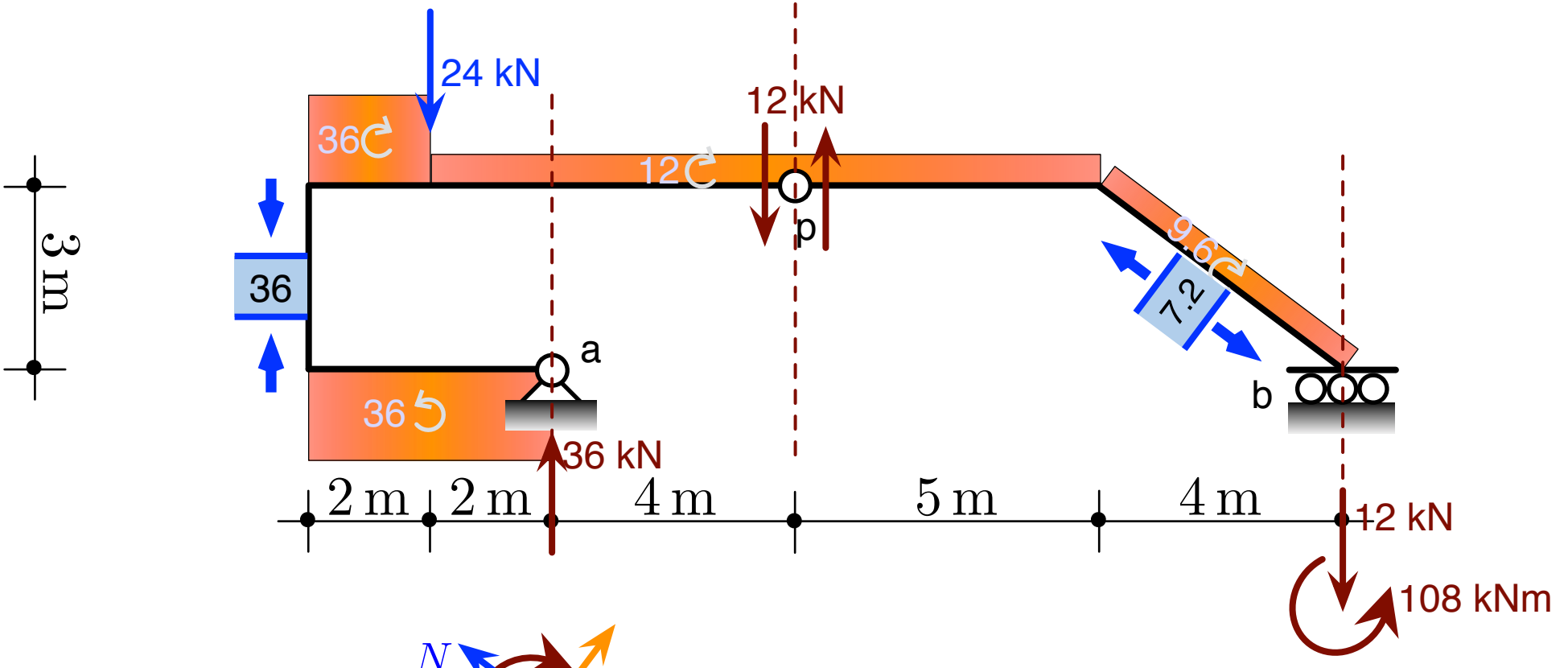
$$R_m(b) = 108\,\text{kN m}$$

SCHEMA 0: diagrammi Mo



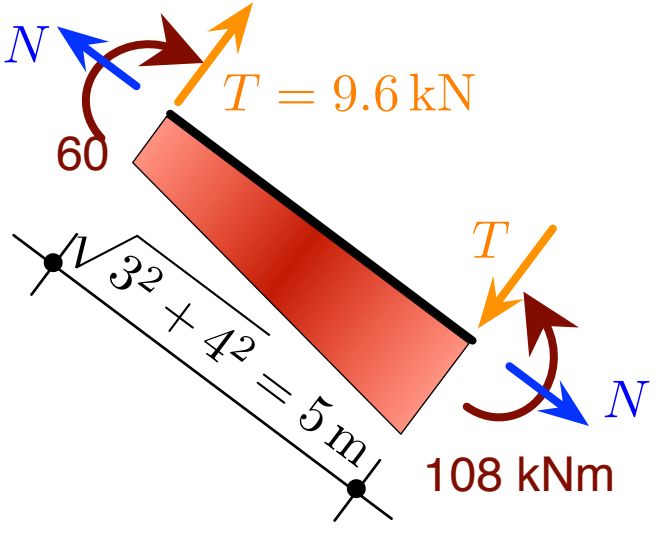
$$\lambda_s \, 144 = My \longrightarrow \lambda_s = \frac{500}{144} = \frac{125}{36} \approx 3.47$$

SCHEMA 0: diagramma To
(No sovrapposto)

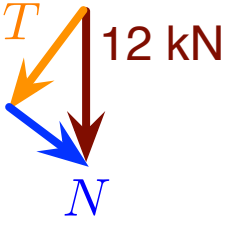


$108 - 60 = T \times 5$

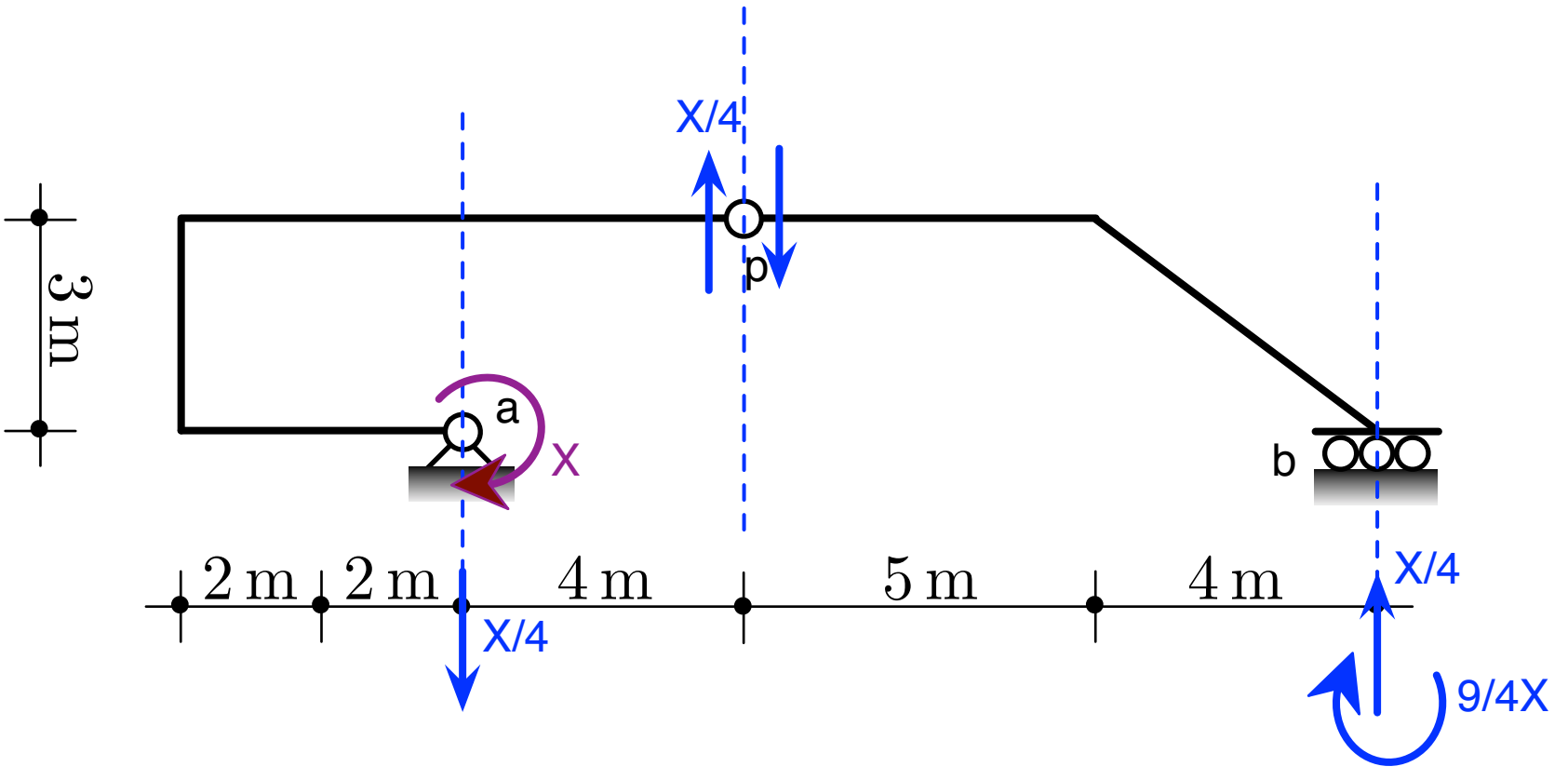
$\Rightarrow T = 9.6\,\text{kN}$



$N = \sqrt{12^2 - 9.6^2} \equiv 7.2\,\text{kN}$



SCHEMA X: reazioni vincolari



1. EQL corpo p-b: 2forze+1momento

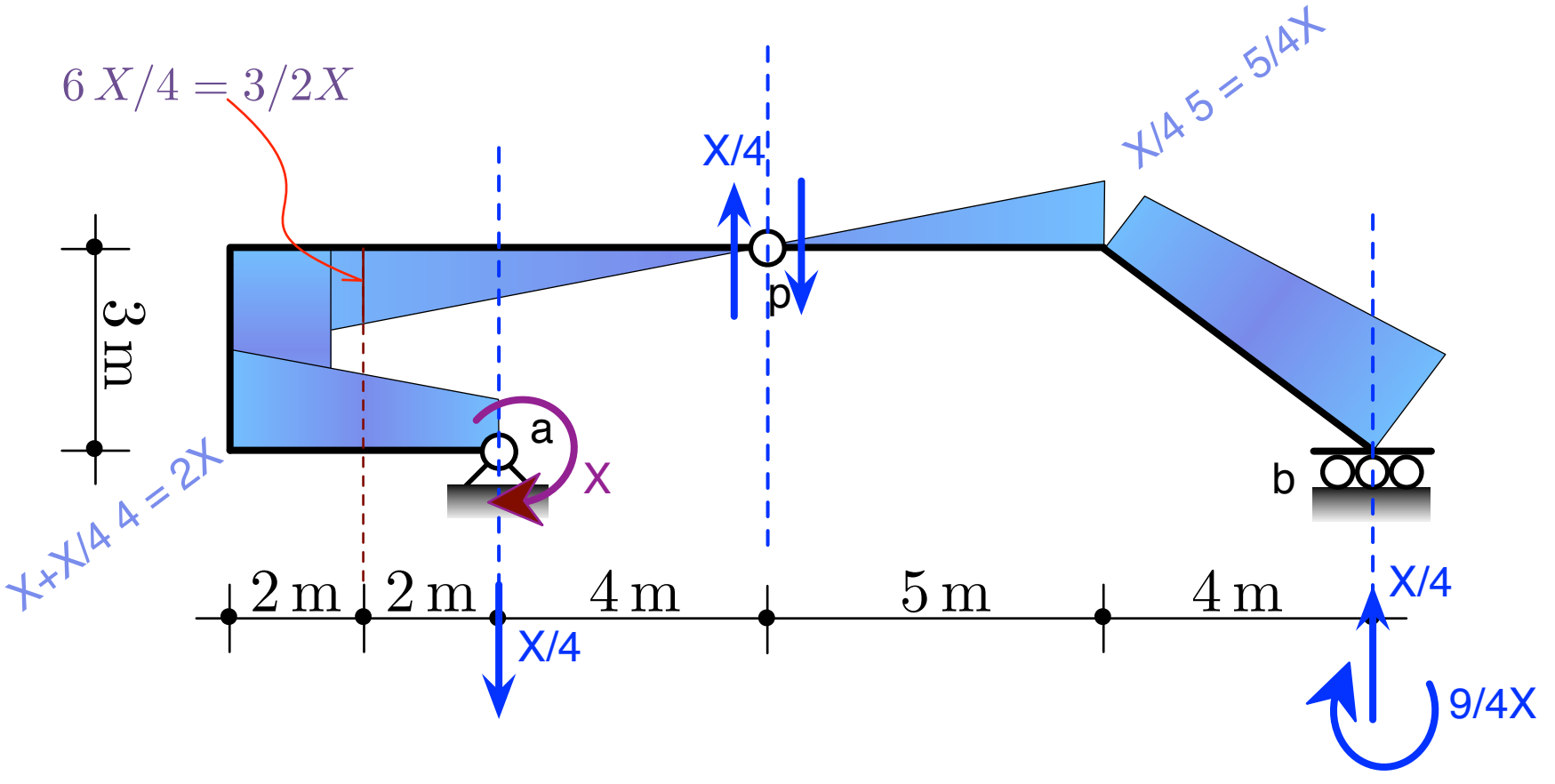
$$R_m(b) = R_v(p) \times 9$$

2. EQL corpo a-b: 2forze+1momento

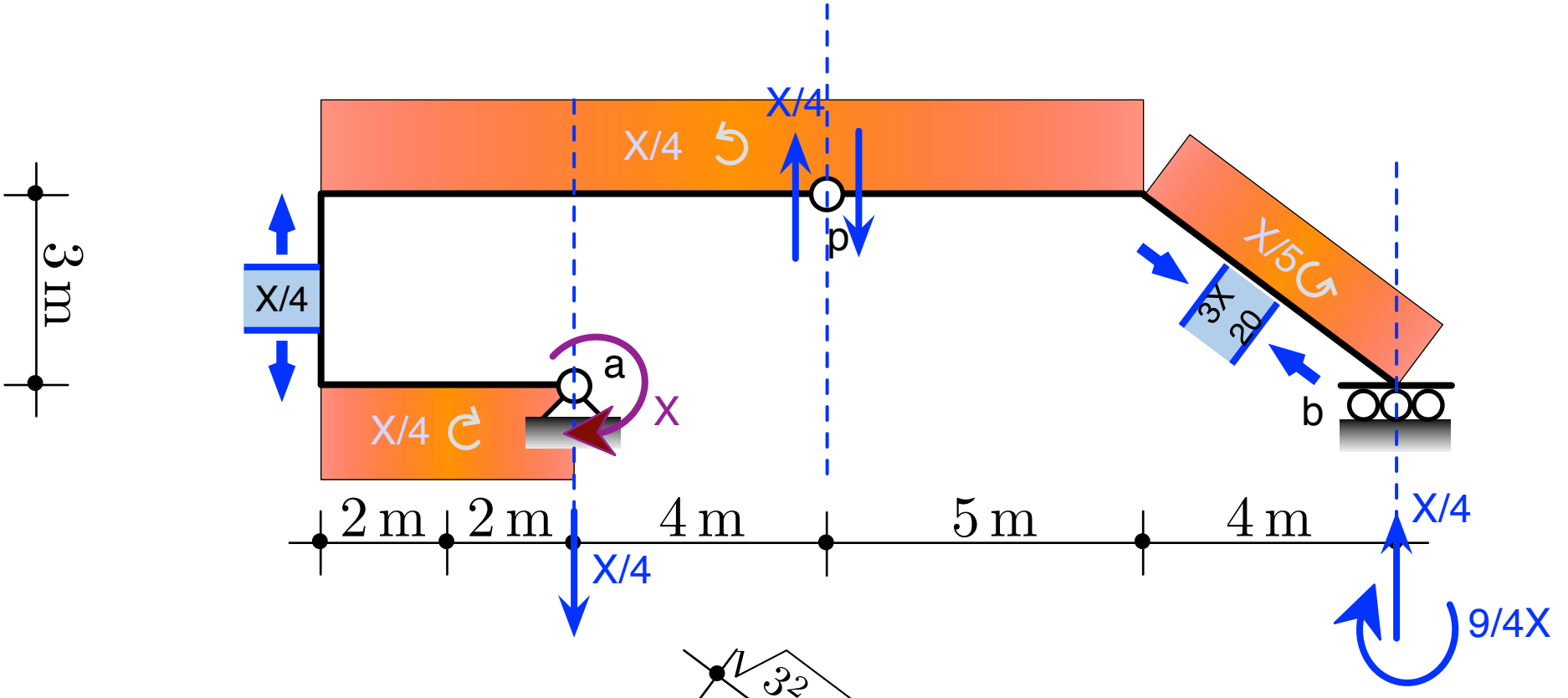
$$\sum_a M = 0 \rightarrow X = R_v(p) \times 4 \rightarrow R_v(p) = X/4$$

$$R_m(b) = 9/4X$$

SCHEMA X: diagramma Mx

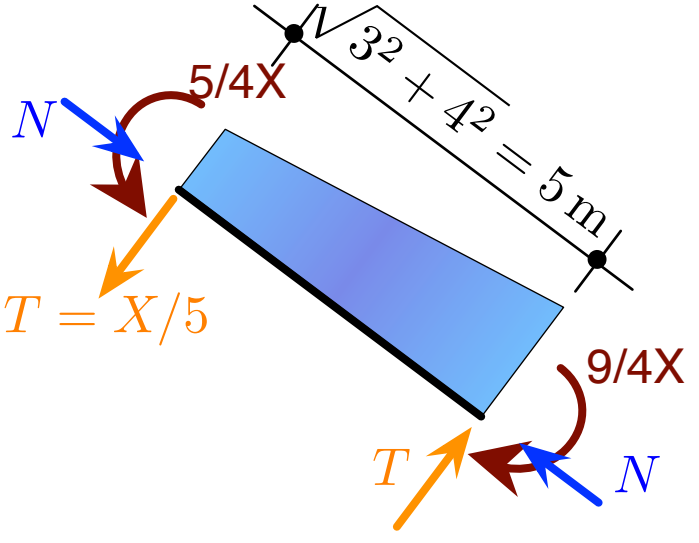


SCHEMA X: diagramma Tx
(Nx sovrapposto)



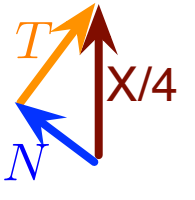
$(9/4 - 5/4)X = T \times 5$

$\rightarrow T = X/5$

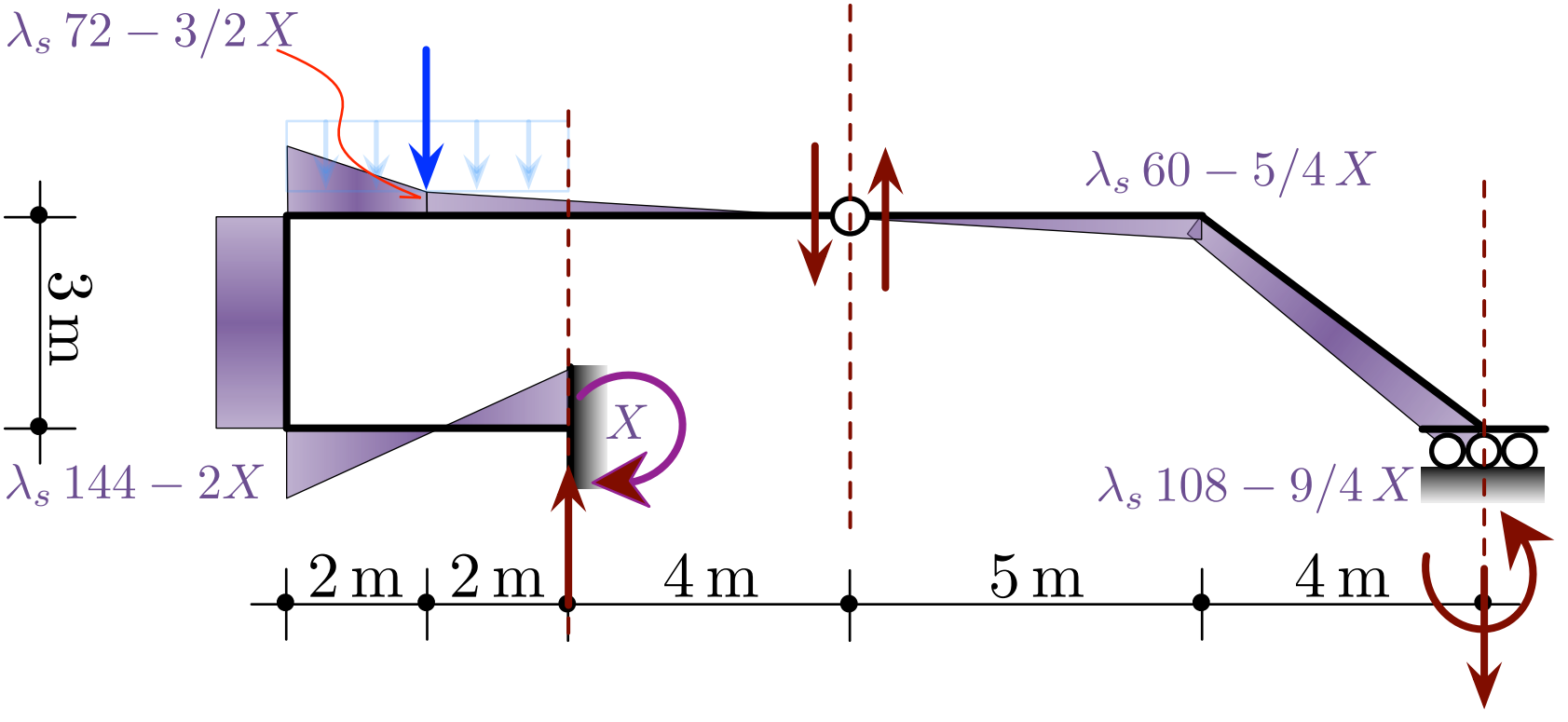


$N = \sqrt{(X/4)^2 - (X/5)^2}$

$\equiv 3X/20\,\mathrm{kN}$



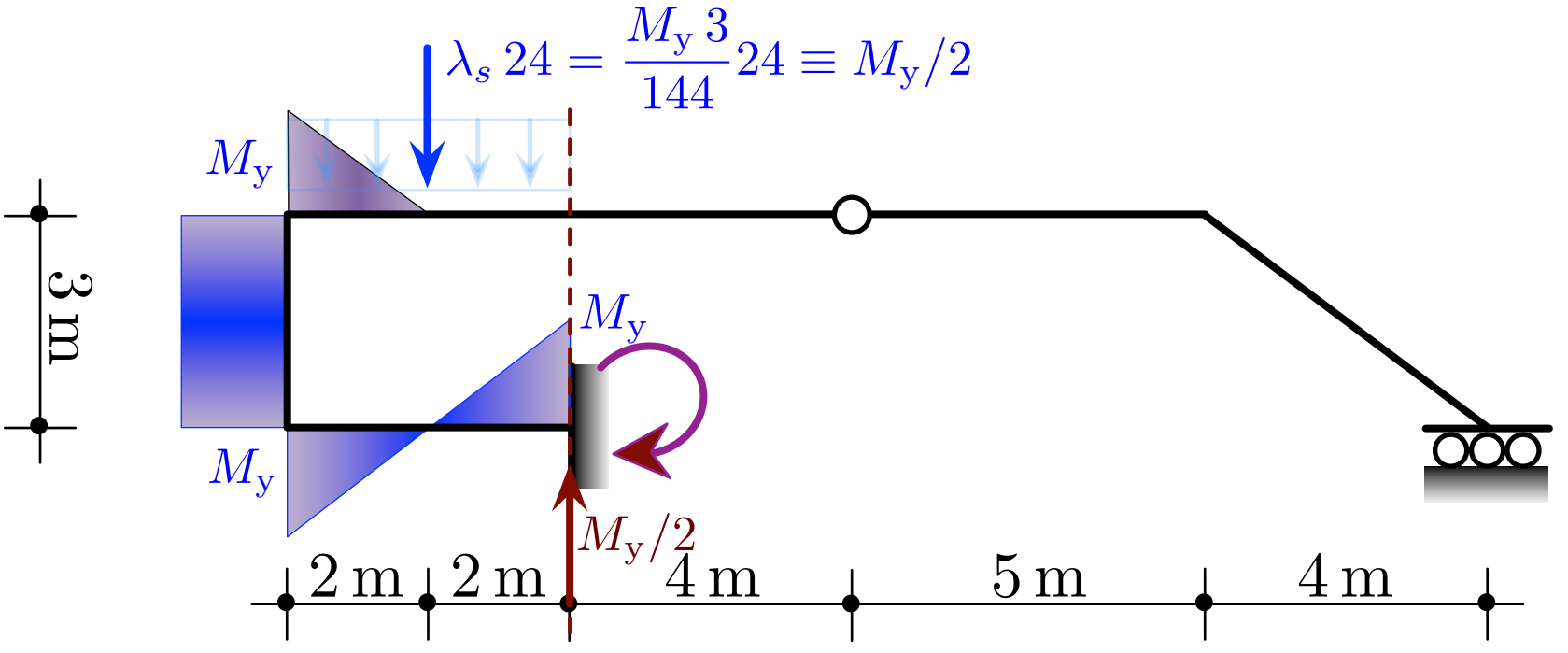
SCHEMA IPERSTATICO: diagramma Mo+Mx



$$
\begin{aligned}
X &\le M_y \\
\lambda_s\, 144 - 2\, X &\le M_y \\
\lambda_s\, 72 - 3/2\, X &\le M_y \\
\lambda_s\, 60 - 5/4\, X &\le M_y \\
\lambda_s\, 108 - 9/4\, X &\le M_y
\end{aligned}
\quad \xrightarrow{X = M_y} \quad
\begin{aligned}
\lambda_s\, 144 &\le 3\, M_y \\
\lambda_s\, 72 &\le 5/2\, M_y \\
\lambda_s\, 60 &\le 9/4\, M_y \\
\lambda_s\, 108 &\le 13/4\, M_y
\end{aligned}
\quad \rightarrow \quad
\begin{aligned}
&\lambda_s\, 144/3 \le M_y \\
&\lambda_s\, 72 \cdot 2/5 \le M_y \\
&\lambda_s\, 60 \cdot 4/9 \le M_y \\
&\lambda_s\, 108 \cdot 4/13 \le M_y
\end{aligned}
\quad \rightarrow \quad
\lambda_s = \frac{M_y\, 3}{144} \approx 10.42
$$

APPROCCIO STATICO

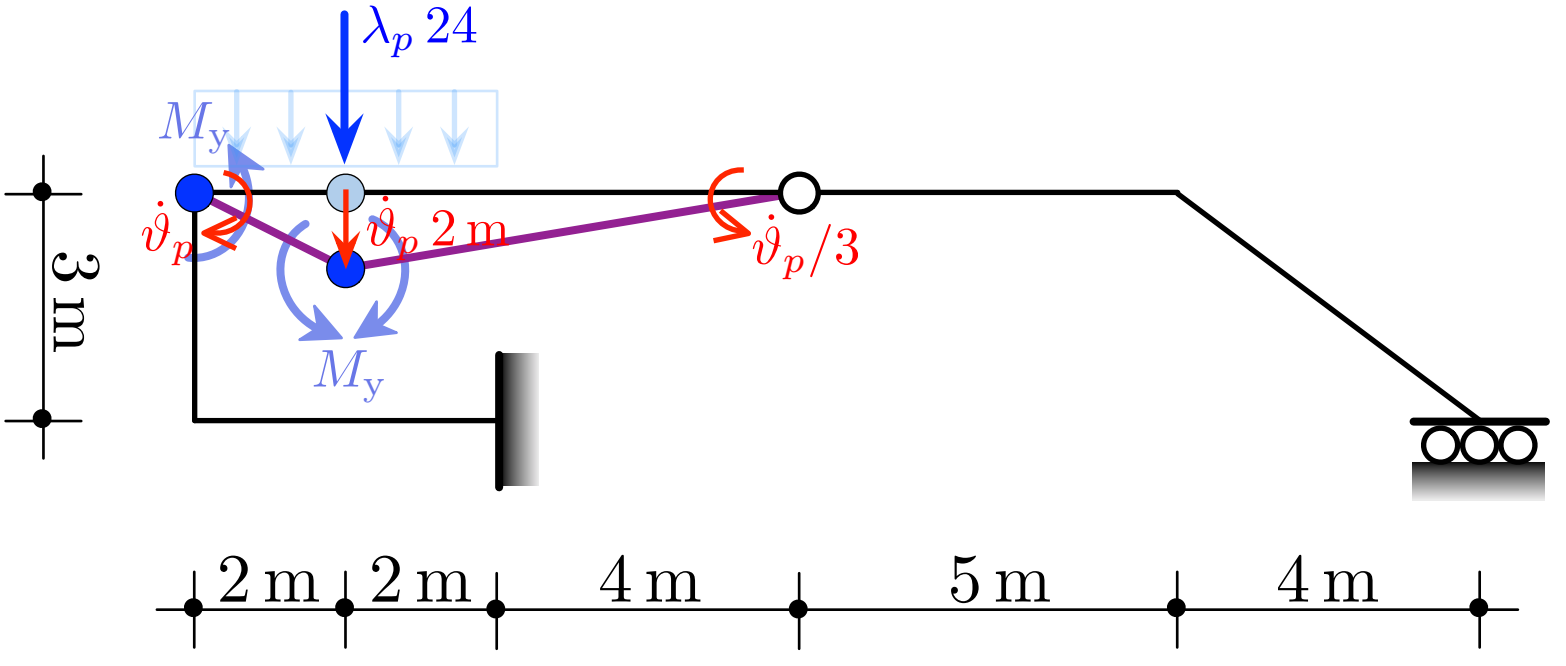
$$\lambda_s = \frac{M_y\, 3}{144} \equiv \frac{125}{12} \approx 10.42$$



$$\begin{aligned}
X &= M_y \\
\lambda_s\, 144 - 2\, X &= M_y \\
\lambda_s\, 72 - 3/2\, X &\le M_y \\
\lambda_s\, 60 - 5/4\, X &\le M_y \\
\lambda_s\, 108 - 9/4\, X &\le M_y
\end{aligned}
\quad \xrightarrow[\lambda_s = \frac{M_y\, 3}{144}]{X = M_y} \quad
\begin{aligned}
72\, M_y\, 3/144 - 3/2\, M_y &= 0 \\
60\, M_y\, 3/144 - 5/4\, M_y &= 0 \\
108\, M_y\, 3/144 - 9/4\, M_y &= 0
\end{aligned}$$

APPROCCIO CINEMATICO

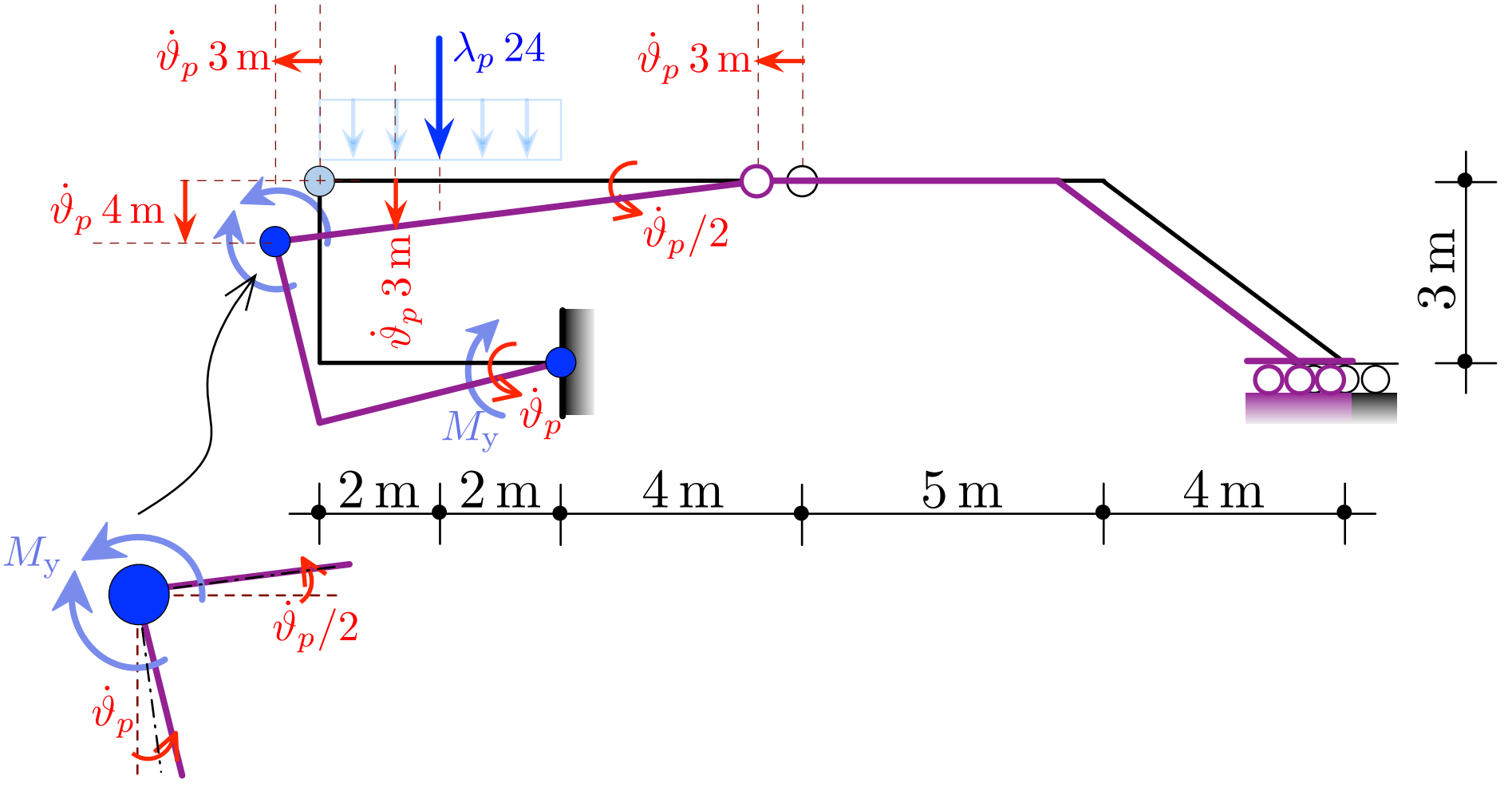
$$\lambda_s = \frac{125}{12} \approx 10.42$$



$$\mathcal{P}_{\text{est}} = \lambda_p\, 24\, \dot\vartheta_p 2 - M_y\big(1 + (1/3 + 1)\big)\dot\vartheta_p = 0 \longrightarrow \lambda_p = \frac{500\, 7/3}{24\, 2} = \frac{875}{36} \approx 24.31$$

APPROCCIO CINEMATICO

$$\lambda_s = \frac{125}{12} \approx 10.42$$



$$\mathcal{P}_{\text{est}} = \lambda_p\, 24\, \dot\vartheta_p 3 - M_\mathrm{y}\big(1 + (1 - 1/2)\big)\dot\vartheta_p = 0 \longrightarrow \lambda_p = \frac{500\,3/2}{24\,3} = \frac{125}{12} \approx 10.42$$

$$\longrightarrow \lambda_s \equiv \lambda_p \equiv \lambda_c = 10.42$$