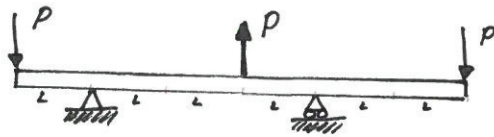


2.4.20

Fritt upplagd balk

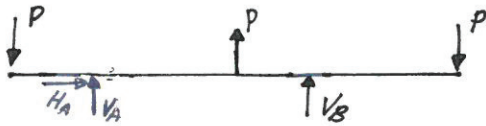
Givet

Sökt Rita T- och M-diagram



Lösning

1. Fritlägg



2. Jmv

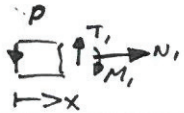
$$\uparrow: -P + V_A + P + V_B - P = 0 \Rightarrow \underline{V_A + V_B = P}$$

$$\rightarrow: H_A = 0$$

$$\curvearrow: P \cdot L + P \cdot 2L + V_B \cdot 3L - P \cdot 5L = 0$$

$$\Rightarrow \underline{V_B = \frac{2}{3}P} \quad \text{och} \quad \underline{V_A = \frac{1}{3}P}$$

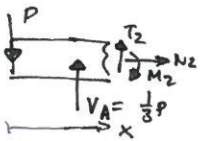
3. Snitta

Del 1 $0 < x \leq L$ 

$$\uparrow: -P + T_1 = 0 \Rightarrow \underline{T_1 = P}$$

$$\rightarrow: N_1 = 0$$

$$\curvearrow: P \cdot x - M_1 = 0 \Rightarrow \underline{M_1(x) = P \cdot x}$$

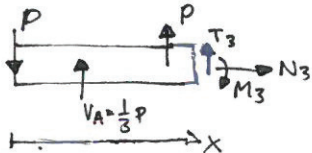
Del 2 $L \leq x \leq 3L$ 

$$\uparrow: -P + \frac{1}{3}P + T_2 = 0 \Rightarrow \underline{T_2 = \frac{2}{3}P}$$

$$\rightarrow: N_2 = 0$$

$$\curvearrow: P \cdot x - \frac{1}{3}P(x-L) - M_2 = 0$$

$$\Rightarrow \underline{M_2(x) = \frac{2}{3}P \cdot x + \frac{P \cdot L}{3}}$$

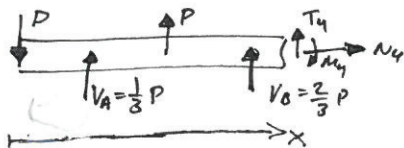
Del 3 $3L \leq x \leq 4L$ 

$$\uparrow: -P + \frac{1}{3}P + P + T_3 = 0 \Rightarrow \underline{T_3 = -\frac{1}{3}P}$$

$$\rightarrow: N_3 = 0$$

$$\curvearrow: P \cdot x - \frac{1}{3}P(x-L) - P \cdot (x-3L) - M_3 = 0$$

$$\Rightarrow \underline{M_3(x) = \frac{P}{3}(10L - x)}$$

Del 4 $4L \leq x \leq 6L$ 

$$\uparrow: -P + \frac{1}{3}P + P + \frac{2}{3}P + T_4 = 0 \Rightarrow \underline{T_4 = -P}$$

$$\rightarrow: N_4 = 0$$

$$\curvearrow: P \cdot x - \frac{1}{3}P(x-L) - P \cdot (x-3L) - \frac{2}{3}P \cdot (x-4L) - M_4 = 0$$

$$\Rightarrow \underline{M_4(x) = \frac{18PL - 3Px}{3}}$$

Således har vi följande:

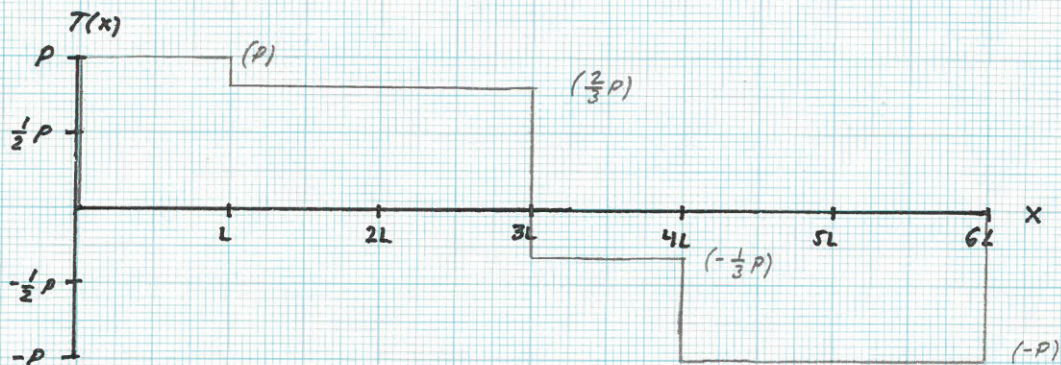
	$x=0$	$0 < x \leq L$	$L \leq x \leq 3L$	$3L \leq x \leq 4L$	$4L \leq x \leq 6L$	$x=6L$
$T(x)$	0	P	$\frac{2}{3}P$	$-\frac{1}{3}P$	$-P$	0
$M(x)$	0	$P \cdot x$	$\frac{2P}{3} \cdot x + \frac{P \cdot L}{3}$	$\frac{P}{3}(10L - x)$	$\frac{18PL - 3Px}{3}$	0

2.4.20

forts. 1

T- och M-diagram

T-diagram



M-diagram

