

Announcements

- In-class Written Quiz 4 – Friday, October 26
- New PL HW due dates – check course schedule website

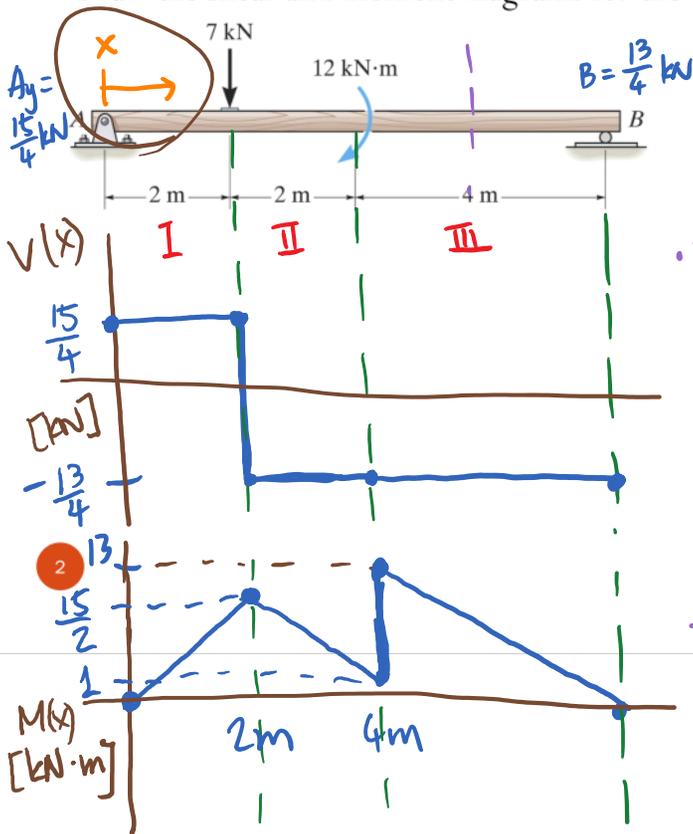
Upcoming deadlines:

- Thursday (10/25)
 - PL HW

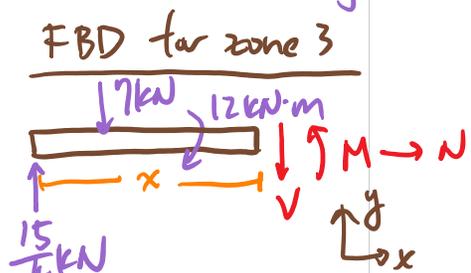


Shear and Moment Diagram

Draw the shear and moment diagrams for the beam.



$V_3(x)$?
 $M_3(x)$?
 • Take the whole left piece to do analysis.



• Use $\sum F_y = 0$ to find $V(x)$
 $\sum F_y$

$$\sum F_y = \frac{15}{4} \text{ kN} - 7 \text{ kN} - V = 0$$

$$\rightarrow V = -\frac{13}{4} \text{ kN}$$

Use $\sum M = 0$ to find $M(x)$

$$\sum M_A = -(7 \text{ kN})(2 \text{ m}) - (12 \text{ kN}\cdot\text{m}) - V \cdot x + M = 0$$

$$\rightarrow M_3(x) = +14 + 12 + \left(-\frac{13}{4}x\right)$$

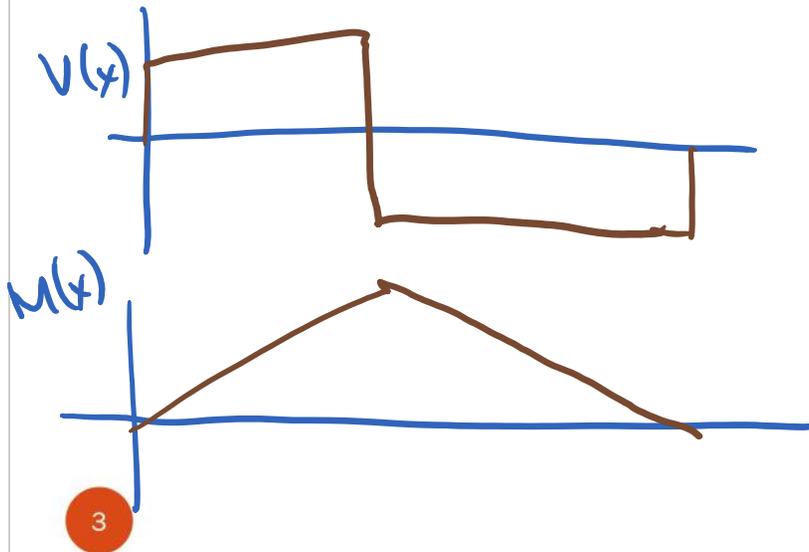
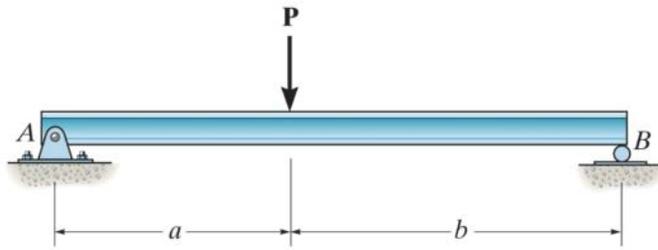
$$M_3(x) = +26 - \frac{13}{4}x$$

$4 \text{ m} \leq x < 8 \text{ m}$ for zone 3

$$M_3(4 \text{ m}) = \left[26 - \frac{13}{4}(4)\right] \text{ kN}\cdot\text{m} = 13 \text{ kN}\cdot\text{m}$$

$$M_3(8 \text{ m}) = \left[26 - \frac{13}{4}(8)\right] \text{ kN}\cdot\text{m} = 0$$

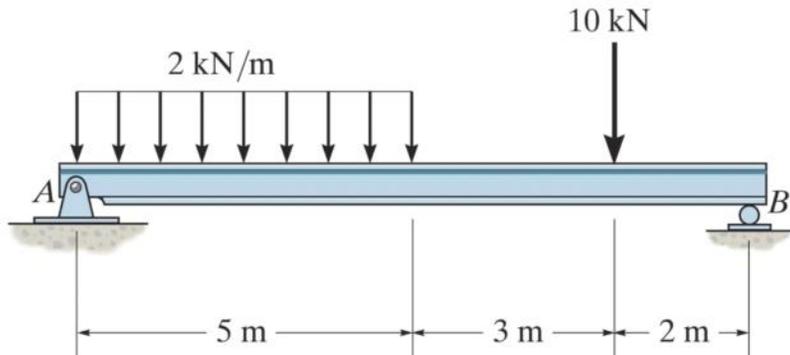
Objective: Shear and Moment Diagram



3

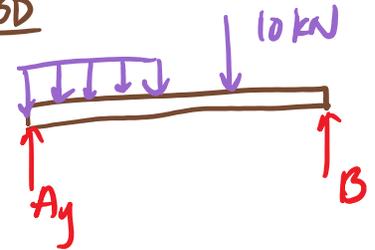
Shear and Moment Diagram

Draw the shear and moment diagrams for the beam.

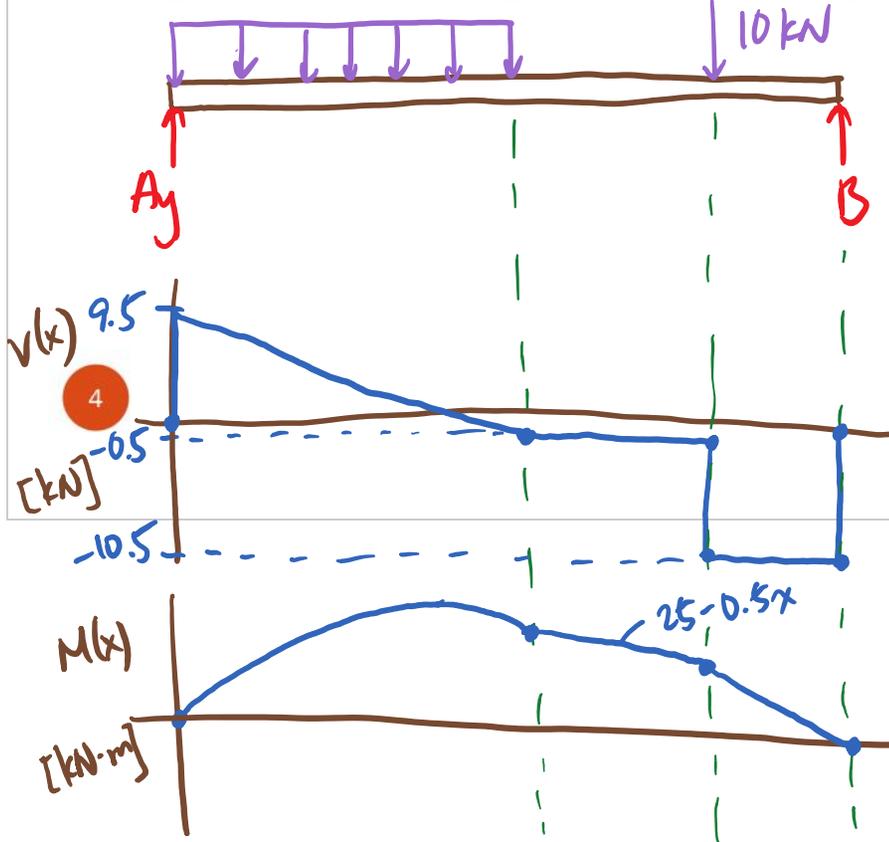


Use the whole beam AB to find A_y & B.

FBD

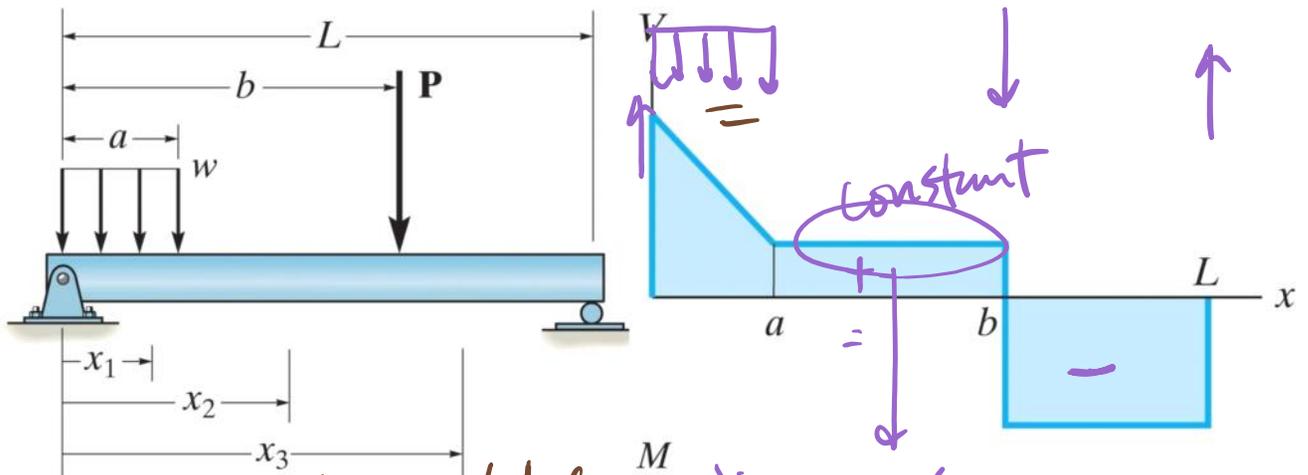


$\rightarrow A_y = 9.5 \text{ kN}, B = 10.5 \text{ kN}$



Relationships between w , V , M

Draw the shear and moment diagrams for the beam.



* Notice w and V are related
 by: $V(x) = \int w(x) dx$
 and V and M are related
 by $M(x) = \int V(x) dx$.

* Concentrated force load will create $V(x)$ discontinuity (jump)

* Couple moment will create $M(x)$ discontinuity (jump)