

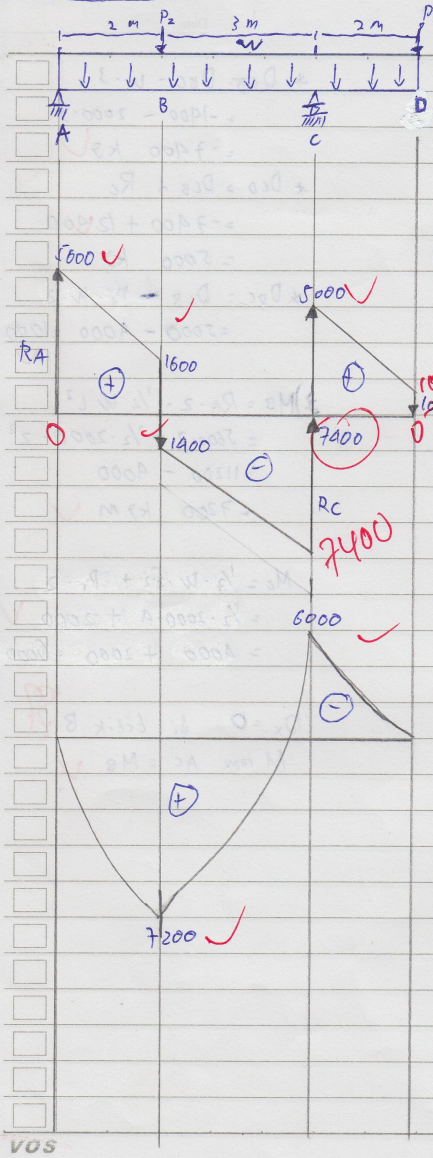
Kelompok 5

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Date :



1. Hitung  $R_A$  &  $R_C$
2. Hitung  $D_A, D_B, D_C, D_D$
3. Hitung  $M_B, M_C, M_{maxAC}$
4. Gambarkan bidang  $D$  &  $M$

1.)  $\sum M_C = 0$

~~$R_A \cdot 5 + W \cdot 2 \cdot 1 - W \cdot 5 \cdot 2,5 + P_1 \cdot 2 - P_2 \cdot 3 = 0$~~

$\sum R_A + 2000 \cdot 2 - 2000 \cdot 5 \cdot 2,5 + 1000 \cdot 2 - 3000 = 0$

$\sum R_A = 28000 - 25000 + 2000 - 7000$

$R_A = \frac{28000}{5} = 5600 \text{ kg}$

$\sum M_A = 0$

$R_C \cdot 5 + W \cdot 7 \cdot 3,5 - P_2 \cdot 2 - P_1 \cdot 7 = 0$

$5R_C - 49000 - 3000 \cdot 2 - 1000 \cdot 7 = 0$

$5R_C = 49000 + 6000 + 7000$

$= 62000$

$R_C = 12400 \text{ kg}$

$\sum V = 0$

$R_A + R_B = W \cdot 7 + P_1 + P_2$

$12400 + 5600 = 14000 + 2000 + 1000$

$18000 = 18000 \checkmark \text{ OK}$

2.) \*  $D_A = R_A = 5600 \text{ kg}$

\*  $D_{BA} = R_A - W \cdot 2$

$= 5600 - 2000 \cdot 2$

$= 1600 \text{ kg}$

\*  $D_{BC} = D_{BA} - P_2$

$= 1600 - 3000 = -1400 \text{ kg}$

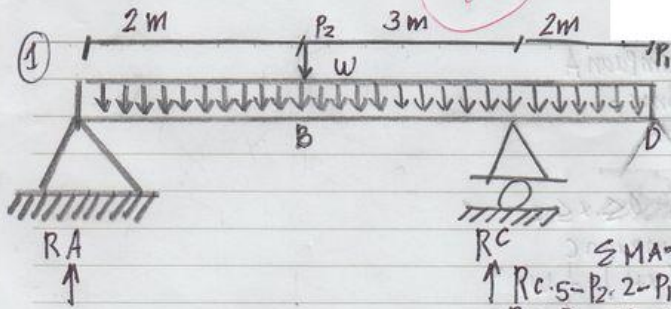
VOS

Kelompok 1

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No.

Date



$w = 100 \text{ kg/m}$

$P_1 = 1000 \text{ kg}$

$P_2 = 3000 \text{ kg}$

$w = 2000 \text{ kg}$

$\sum M_A = 0$

$R_C \cdot 5 - P_2 \cdot 2 - P_1 \cdot 7 + w \cdot 12,5 - w \cdot 2 \cdot 6 = 0$

$R_C = P_2 \cdot 2 + P_1 \cdot 7 + w \cdot 12,5 + w \cdot 12$

$= 3000 \cdot 2 + 1000 \cdot 7 + 2000 \cdot \frac{25}{2} + 2000 \cdot 12$

$= 6000 + 7000 + 25000 + 24000 = 0$

$\sum R_C = 62000$

$R_C = 12400 \text{ kg}$

$\sum M_C = 0$

$R_A \cdot 5 - P_2 \cdot 3 - w \cdot 5 \cdot 2,5 + w \cdot 2 \cdot 1 + P_1 \cdot 2 = 0$

$R_A \cdot 5 = P_2 \cdot 3 + 2000 \cdot 12,5 - 2000 \cdot 2 - 1000 \cdot 2$

$= 3000 \cdot 3 + 25000 - 4000 - 2000 =$

$= 34000 - 6000$

$R_A \cdot 5 = 28000$

$R_A = 5600 \text{ kg}$

$M_B = R_A \cdot 2 - w \cdot 2$

$= 5600 \cdot 2 - 2000 \cdot 2$

$= 11200 - 4000 = 7200 \text{ kg} \cdot \text{m}$

$M_C = R_C \cdot 2 - w \cdot 2 \cdot 1$

$= 12400 \cdot 2 - 2000 \cdot 2$

$= 24800 - 4000$

$= 20800 \text{ kg} \cdot \text{m}$

$\sum V = 0$

$R_A + R_C = P_1 + P_2 + w \cdot L_1 + w \cdot L_2$

$5600 + 12400 = 1000 + 3000 + 2000 \cdot 5 + 2000 \cdot 2$

$18000 = 18000 \text{ kg} \checkmark \text{OK}$

$\odot D_A = R_A$

$= 5600 \text{ kg}$

$\odot D_B = R_A - w \cdot 2$

$= 5600 - 4000$

$= 1600 \text{ kg}$

$\odot D_C = R_C$

$= 12400 \text{ kg}$

$\odot D_D = R_B$

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atau  
S

M. maks di tinjau dari tumpuan A

$$Mx \Rightarrow RA \cdot x - \frac{1}{2} wx^2 \Leftrightarrow \frac{dMx}{dx} = 0$$
$$0 \Rightarrow \frac{RA}{w} = \frac{5600}{2000}$$

$x = 2,8 \text{ m}$  (mungkin)

⊙ M maks ditinjau dari tumpuan C

$$Mx = RCx - P_1(x+2) - w \cdot 2(x+1) - \frac{1}{2} wx^2$$
$$= RCx - P_1 - P_1 \cdot 2 - 2wx - 2w - \frac{1}{2} wx^2$$
$$\frac{dMx}{dx} = 12400x - 1000x - 2000 - 2 \cdot 2000x - 1000 - 1000x^2$$
$$0 = 12400 - 1000 - 4000 - 2000x$$

$$2000x = 7400$$
$$x = \frac{7400}{2000}$$
$$x = 3,7 \text{ (tidak mungkin)}$$

⊙ M maks ditinjau dari tumpuan A > 2

$$Mx = RA \cdot x - \frac{1}{2} wx^2 - P_2(x-2)$$
$$= 5600x - 1000x^2 - 3000x + 6000$$
$$\frac{dMx}{dx} = 0 = 5600 - 2000x - 3000$$

$$2000x = 2600$$
$$x = \frac{2600}{2000}$$

$x = 1,3 \text{ m}$  (tidak mungkin)

⊙ M max ditinjau di tumpuan (0 ≤ x ≤ 5)

$$Mx = RA \cdot x - \frac{1}{2} wx^2$$
$$\frac{dMx}{dx} = 0 \Rightarrow RA - wx = 0$$
$$x = \frac{RA}{w} \Rightarrow x = \frac{5600}{2000} = 2,8 \text{ m (mungkin)}$$