
M R
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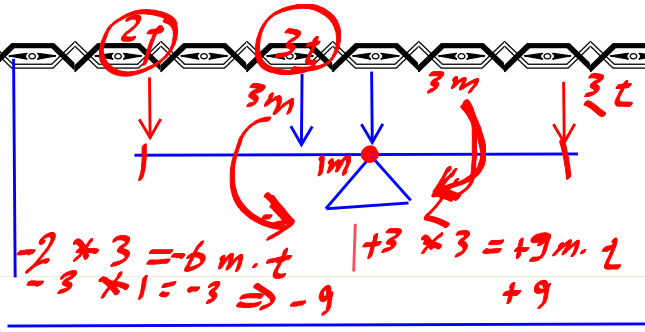
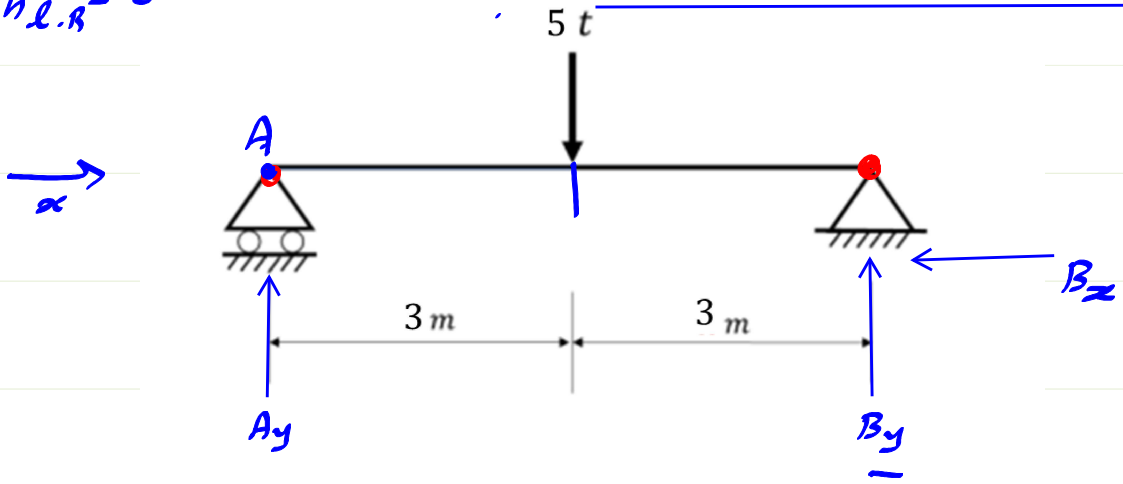
فيزياء
استاتيكا
دوائر كهربية
الكترونيات
ميكانيكا الانشائات
هيدروليكا
مدرس خصوصي
اونلاين
حضوري
يحصل الطالب علي
. مقاطع فيديوهات لشرح المقرر بشكل وافي
. ملخص للمادة Pdf للمذكرة والمراجعة
. محاضرات مباشرة علي برنامج زووم
لمناقشة الأجزاء الغير مفهومة
. تواصل مستمر مع معلم المادة
للتواصل
0567630097
0565657741



$\Sigma f_x = 0, \Sigma f_y = 0, \Sigma M = 0$

$\Sigma M_{h.l.R} = 0$



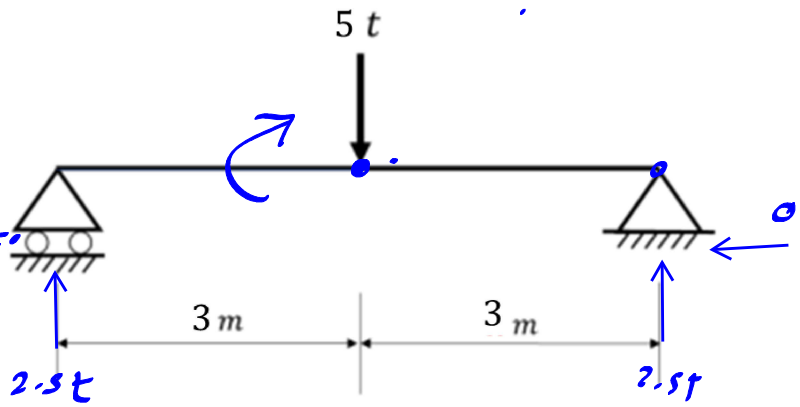
$\Sigma f_x = 0 \Rightarrow +B_x = 0$.

$\Sigma f_y = A_y - 5 + B_y = 0$ *

$\Sigma M_a = 5 * 3 - B_y * 6 = 0 \Rightarrow B_y = \frac{5 * 3}{6} = 2.5t \uparrow$

$\Sigma f_y = A_y - 5 + 2.5 = 0 \Rightarrow A_y = 2.5t \uparrow$

Checks



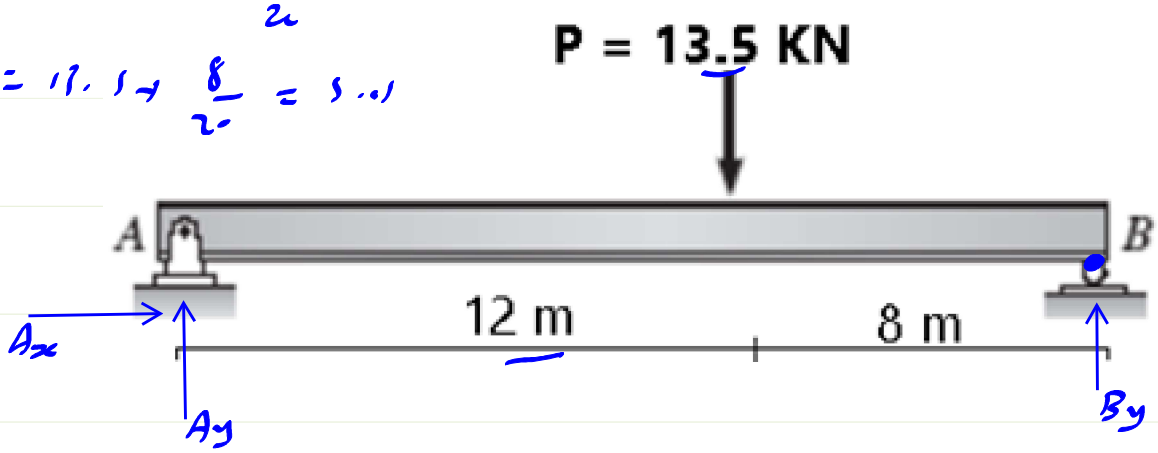
$\Sigma f_x = 0$

$\Sigma f_y = 2.5 - 5 + 2.5 = 0$ ✓

$\Sigma M_c = 2.5 * 3 - 7.5 * 3 = 0$

$B_y = 13.5 \times \frac{12}{20}$

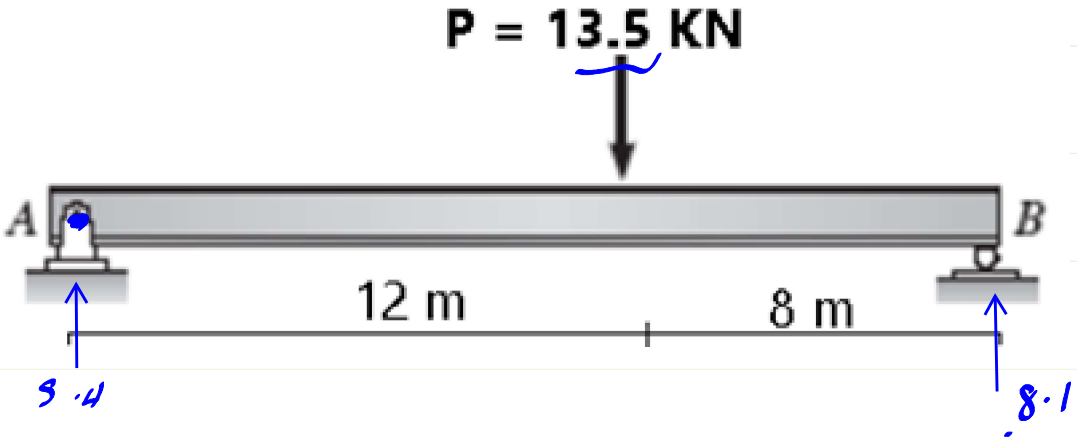
$A_y = 13.5 \times \frac{8}{20} = 5.4$



$\Sigma F_x = A_x = 0$

$\Sigma M_B = -13.5 \times 8 + A_y \times 20 = 0 \Rightarrow A_y = \frac{13.5 \times 8}{20} = 5.4 KN \uparrow$

$\Sigma F_y = 5.4 - 13.5 + B_y = 0 \Rightarrow B_y = 8.1 KN$



$\Sigma F_x = 0$ ✓

$\Sigma F_y = 5.4 - 13.5 + 8.1 = 0$ ✓

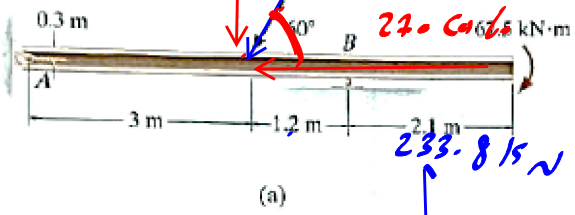
$\Sigma M = +13.5 \times 12 - 8.1 \times 20$

270 sin 60

270 kN

EXAMPLE 2.8

Determine the reactions on the beam shown in Fig. 2–28*a*.



(a)

270 cos 60

67.5 kN.m

233.8 kN

135 kN

0.3 m

A

B

3 m

1.2 m

A_x

A_y

B_y

$\Sigma f_x = A_x - 135 = 0 \Rightarrow A_x = 135\ kN \rightarrow$

$\Sigma M_A = -135 \times 0.3 + 233.8 \times 3 - B_y \times 4.2 + 67.5 = 0$

$B_y = 173.43\ kN \uparrow$

$\Sigma f_y = A_y - 233.8 + 173.43 = 0$

$A_y = 60.37\ kN \uparrow$

$\Sigma F_x = 0$, $\Sigma F_y = 0$, $\Sigma M = 0$, $\Sigma M_{@R} = 0$

EXAMPLE 2.11

The compound beam in Fig. 2–31*a* is fixed at *A*. Determine the reactions at *A*, *B*, and *C*. Assume that the connection at *B* is a pin and *C* is a roller.

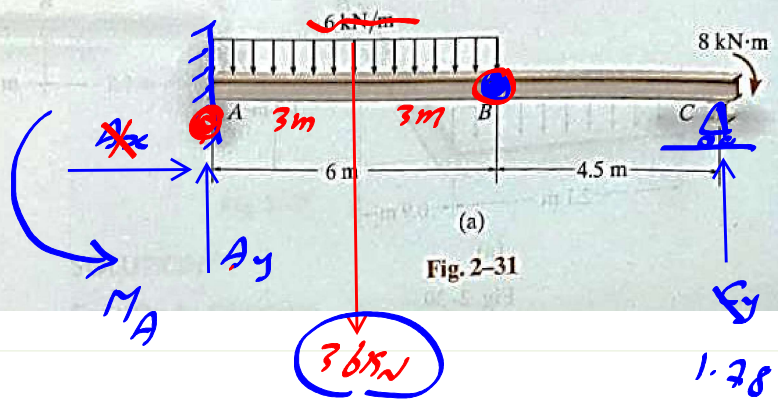


Fig. 2–31

$\Sigma F_x = A_x = 0$

$\Sigma M_{@B_R} = 8 - C_y * 4.5 = 0 \Rightarrow C_y = 1.78\ kN \uparrow$

$\Sigma F_y = A_y - 36 + 1.78 = 0 \Rightarrow A_y = 34.22\ kN \uparrow$

$\Sigma M_{@B_L} = -36*3 + 34.22*6 - M_A = 0$

$M_A = 97.32\ kN.m$ ↺