



مدرس خصوصى



اونلاين

يحصل الطالب على ...

***مقاطع فيديو هات لشرح المقرر بشكل وافي**

***ملخص للمادة للمراجعة النهائية**

***محاضرات مباشرة على برنامج Zoom**

***تواصل مستمر مع معلم المادة للمناقشة**

للتواصل



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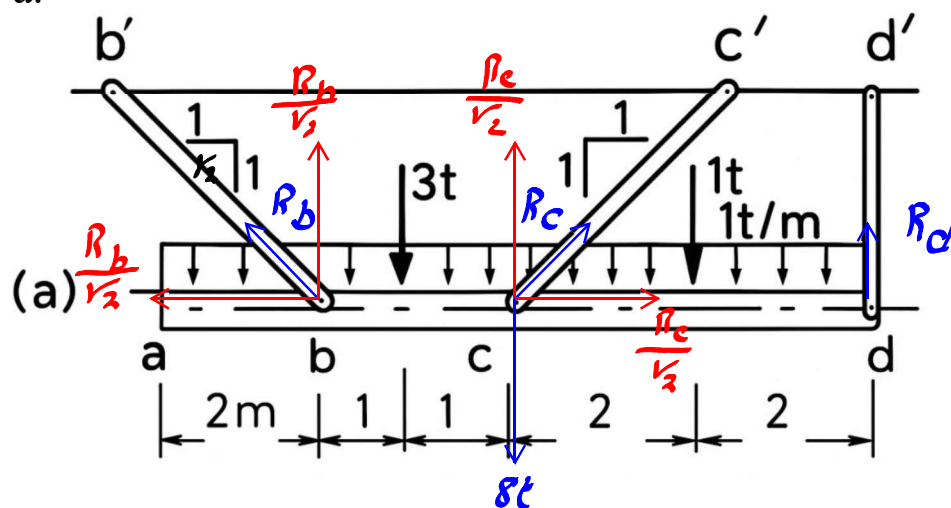


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Example 2.5 $\sum f_x = 0$, $\sum f_y = 0$, $\sum M = 0$

Determine the reactions for beam abcd under the given loads if it is supported by three link members arranged as shown in Fig. 2.6 a.



$$\sum f_x = -\frac{R_b}{\sqrt{2}} + \frac{R_c}{\sqrt{2}} = 0 \Rightarrow R_c = R_b$$

$$\sum M_d = 1 \times 2 + 8 \times 4 - \frac{R_b}{\sqrt{2}} \times 4 + 3 \times 5 - \frac{R_b}{\sqrt{2}} \times 6 = 0$$

$$R_b \left(\frac{4}{\sqrt{2}} + \frac{6}{\sqrt{2}} \right) = 49$$

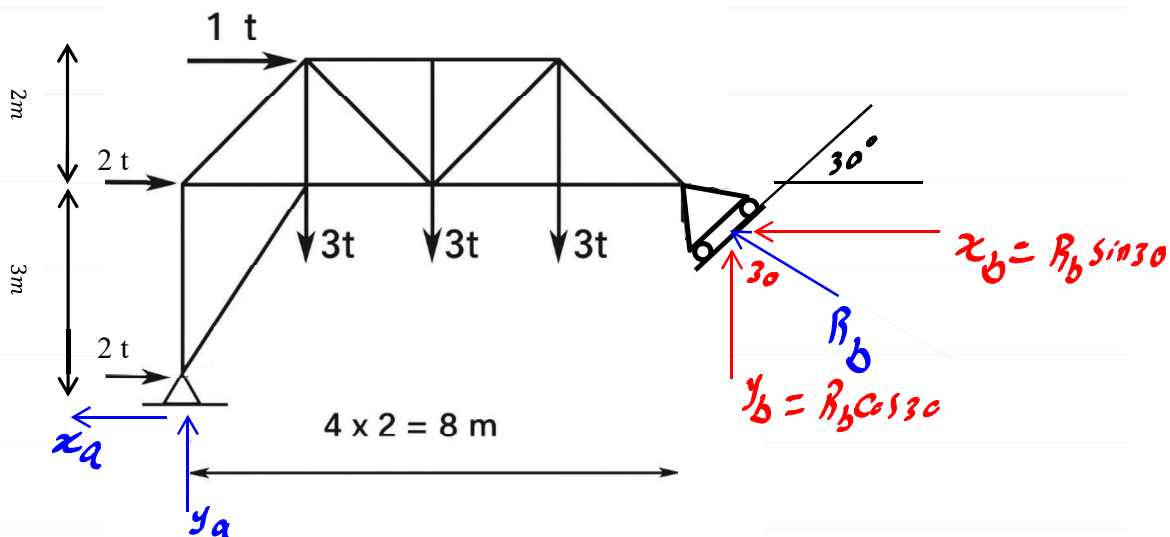
$$R_b = \frac{49}{\frac{4}{\sqrt{2}} + \frac{6}{\sqrt{2}}} = 6.932 \Rightarrow R_c = 6.932$$

$$\sum f_y = \frac{6.93}{\sqrt{2}} - 3 + \frac{6.93}{\sqrt{2}} - 8 - 1 + R_d = 0$$

$$R_d = 2.22 \uparrow$$

Example 2.6

Fig. 2.7a shows the centre line of a truss. Find its reactions for the given system of loads.



$$\sum M_A = -2 \times 3 - 1 \times 5 - 3 \times 2 - 3 \times 4 - 3 \times 6 + R_b \cos 30 \times 8 + R_b \sin 30 \times 3 = 0$$

$$R_b = 5.576 \text{ t}$$

$$\sum F_x = -x_a + 2 + 2 + 1 - 5.576 \sin 30 = 0$$

$$x_a = 2.2 \text{ t} \leftarrow$$

$$\sum F_y = y_a - 3 - 3 - 3 + 5.576 \cos 30 = 0$$

$$y_a = 4.17 \text{ t} \uparrow$$

Check

$$\sum F_x = 0$$

$$\sum F_y = 0$$

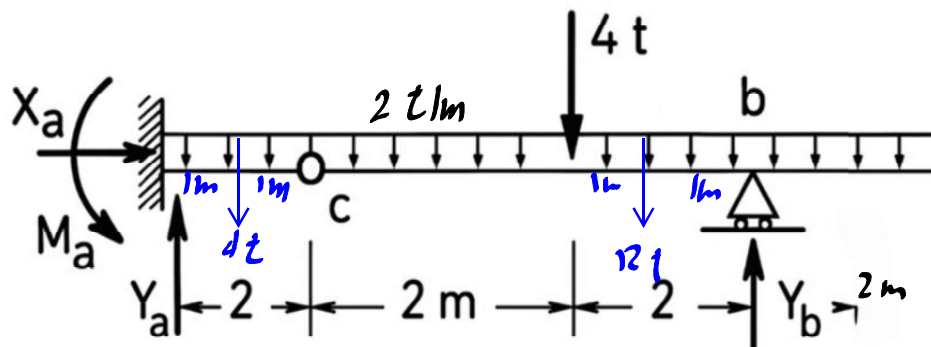
$$\sum M = 0$$

$$\sum f_x = 0, \sum f_y = 0, \sum m = 0, \sum M_{C.L.B} = 0$$

Example 2.8

Determine the reactions of the structure shown in Fig.

2.11 a.



$$\sum f_x = X_a = 0$$

$$\sum M_C = -4 \times 2 - 12 \times 3 + Y_b \times 4 = 0$$

$$Y_b = 11 \text{ t} \uparrow$$

$$\sum f_y = Y_a - 4 - 4 - 12 + 11 = 0$$

$$Y_a = 9 \text{ t} \uparrow$$

$$\sum M_A = 4 \times 1 - 9 \times 2 + M_a = 0$$

$$M_a = 14 \text{ t.m} \curvearrowright$$

check