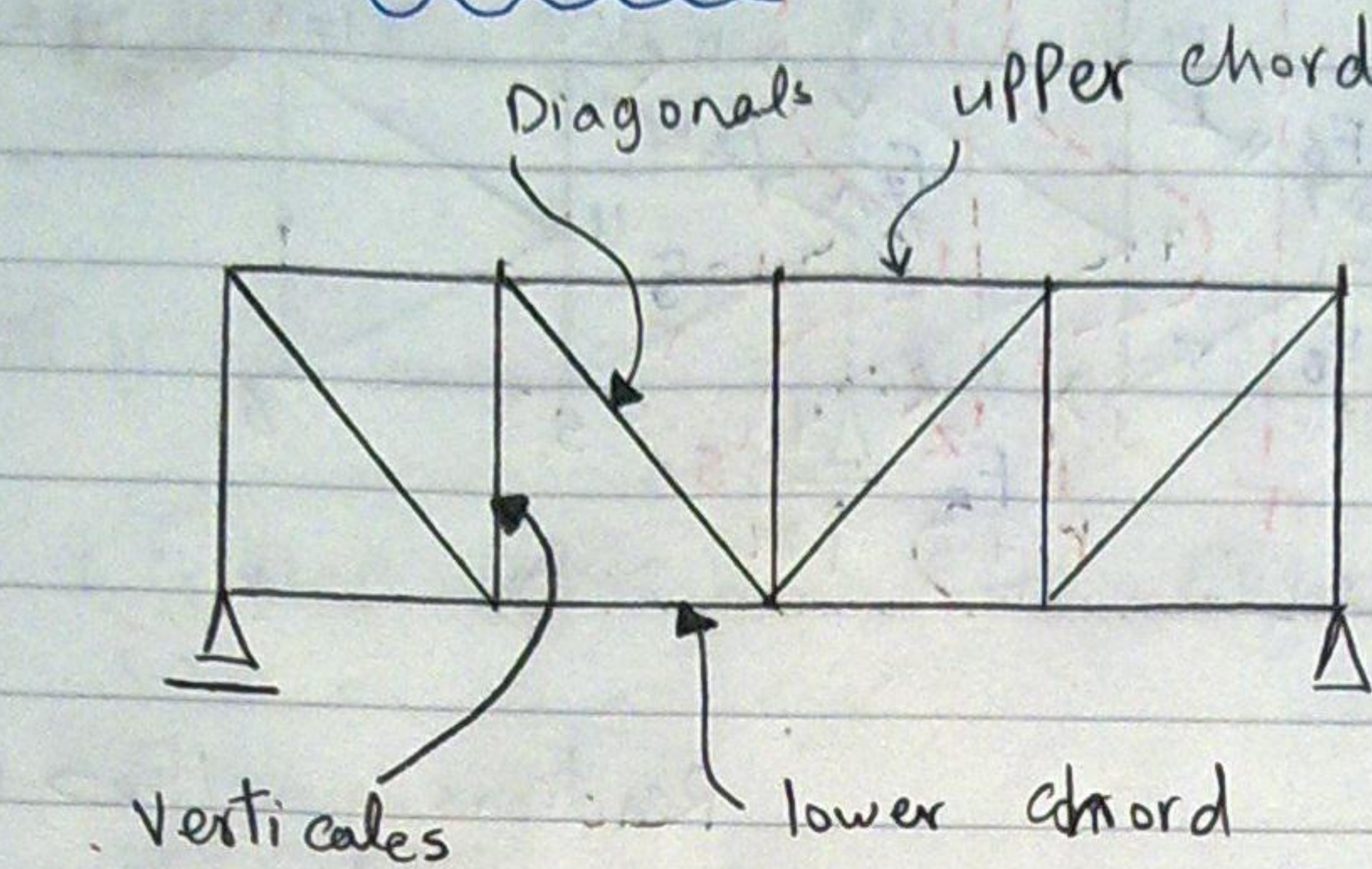
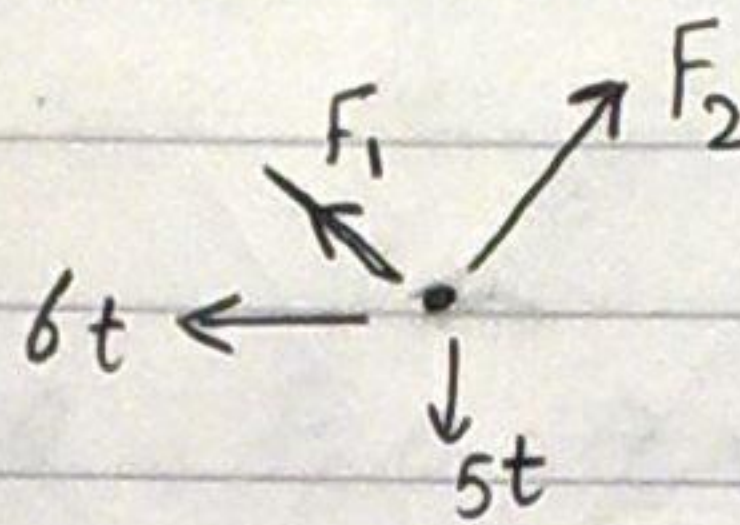


Trusses

lec: 19



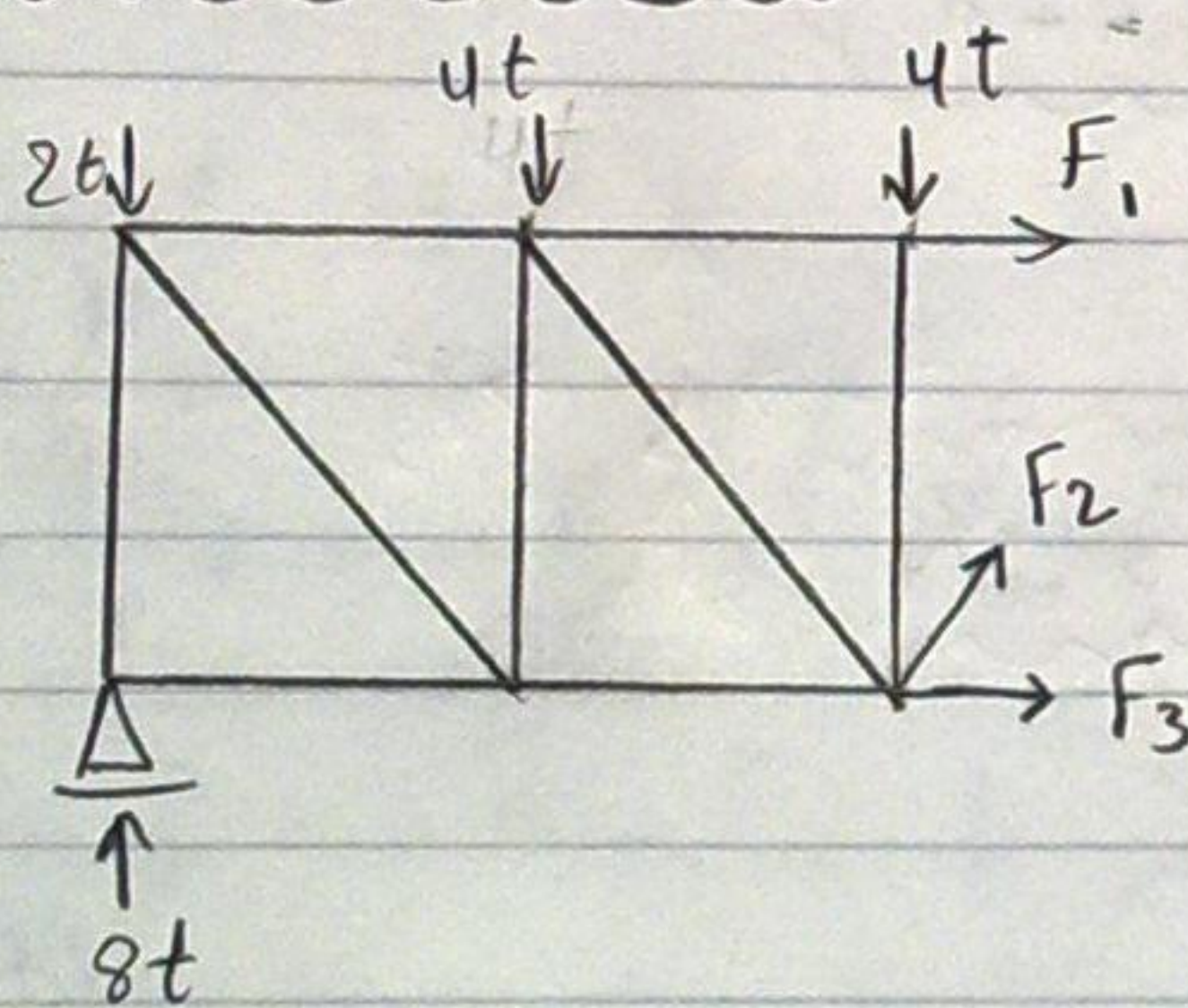
Joint method



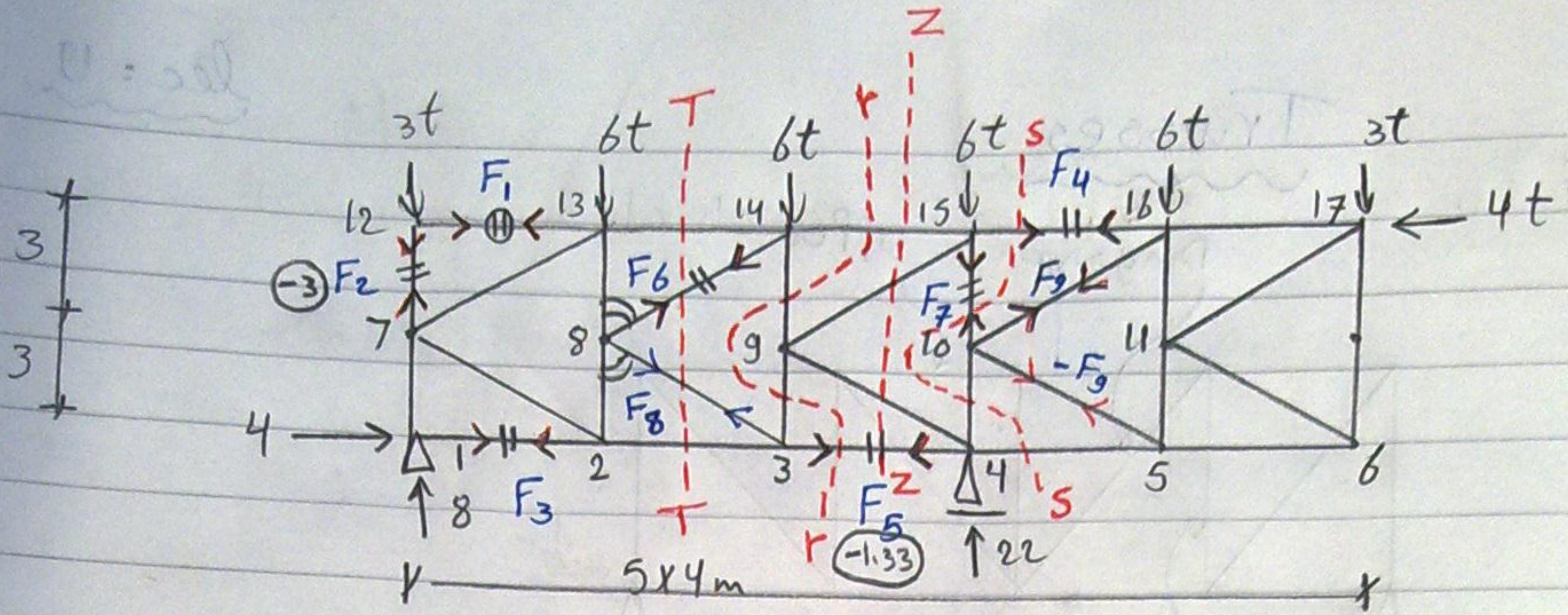
$$\sum X = 0$$

$$\sum Y = 0$$

Section method



Ahmed Badr

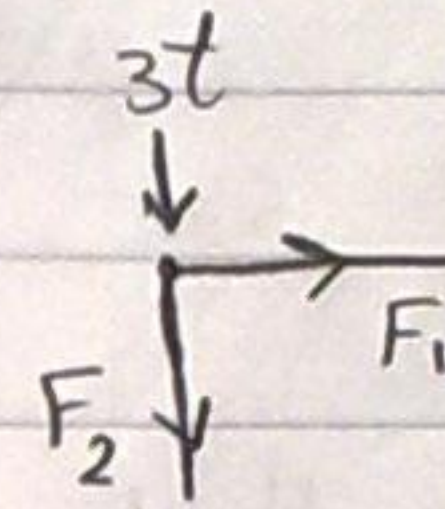


- ① حساب Reactions
 ② رقم Joints و اكتب ردود القوى من الأسفل للأعلى $F_7 \leftarrow F_1$
 ③ افرض اتجاه القوى \leftarrow Tension

Joint ⑫

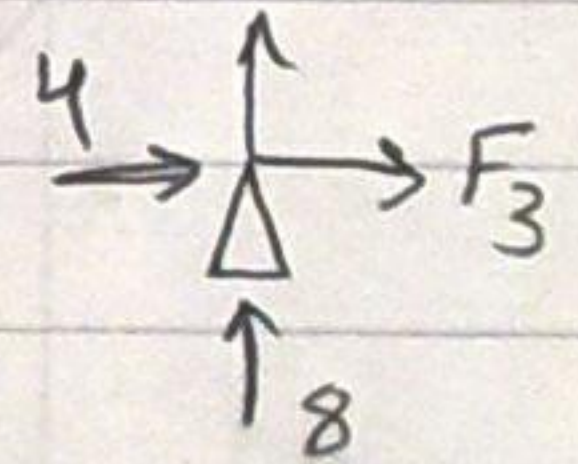
$$\sum x = 0 \Rightarrow F_1 = 0$$

$$\sum y = 0 \Rightarrow 3 + F_2 = 0 \Rightarrow F_2 = -3t$$



Joint ①

$$\sum x = 0 \Rightarrow F_3 + 4 = 0 \Rightarrow F_3 = -4t$$

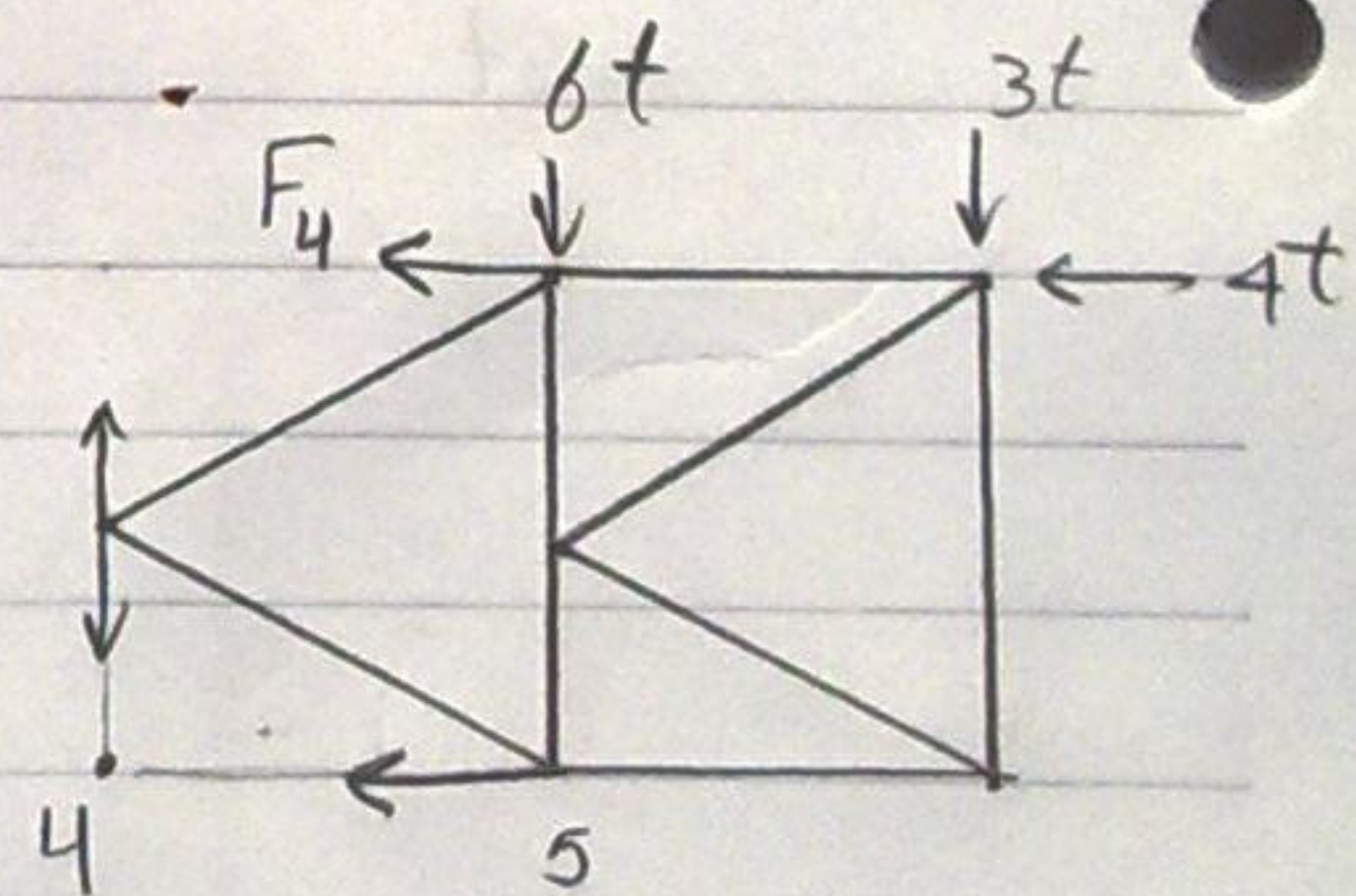


sec. s-s (R.H.S)

$\sum M$) Joint 4

$$6F_4 + 4(6) - 6(4) - 3(8) = 0$$

$$F_4 = +4t$$



sec. r-r (L.H.S)

$\sum M$) Joint 14

$$6F_5 + 6(4) + 6(4) + 3(8) - 8(8) = 0$$

$$F_5 = -1.33t$$

Sec. T-T (Q.H.3)

$$\cos \theta = \frac{3}{5}$$

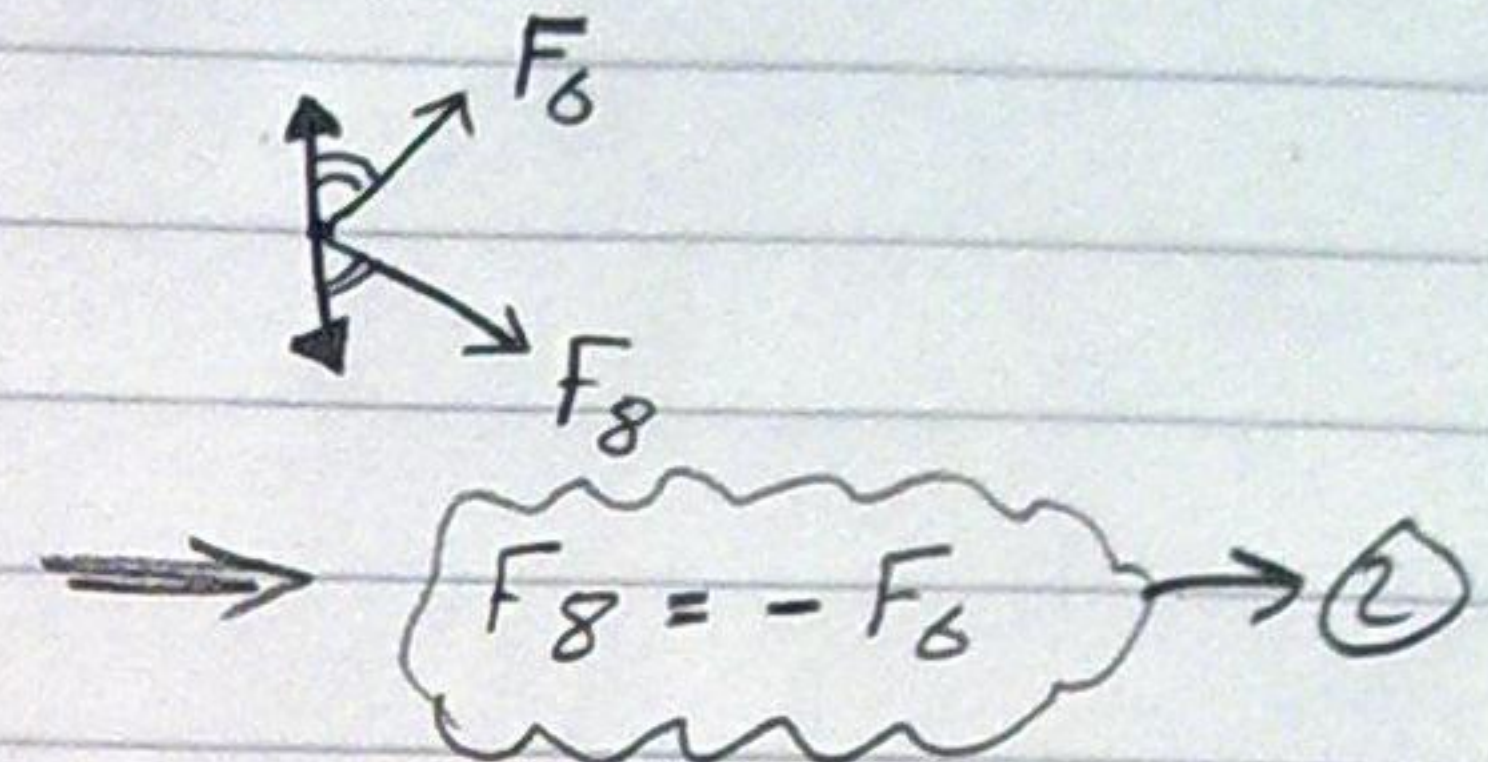
$$\sin \theta = \frac{4}{5}$$

$$\sum y = 0 \Rightarrow 3 + 6 - 8 - F_6 \cos \theta + F_8 \cos \theta = 0$$

$$F_6 \cos \theta - F_8 \cos \theta = 1 \rightarrow (1)$$

@ joint 8

$$\sum x = 0 \Rightarrow F_6 \sin \theta + F_8 \sin \theta = 0$$



$$F_8 = -F_6 \rightarrow (2)$$

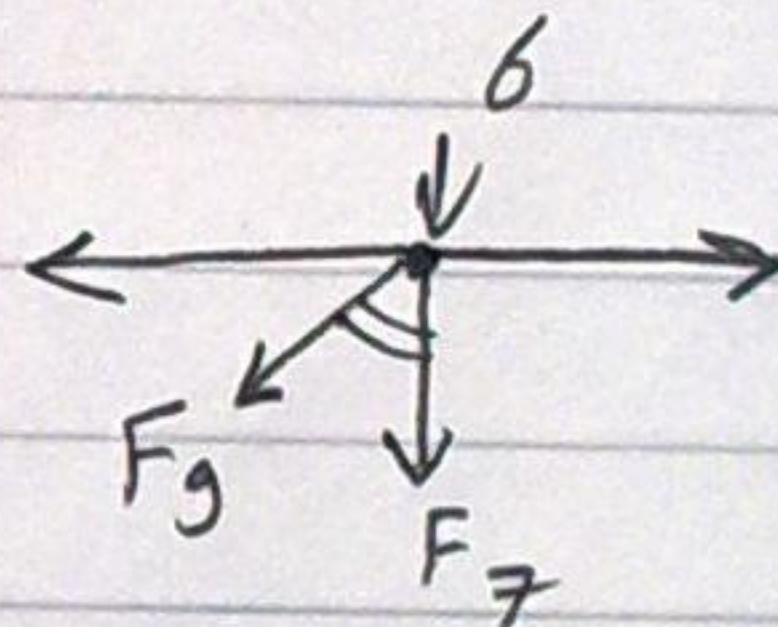
From (2) in (1)

$$F_6 \cos \theta + F_6 \cos \theta = 1 \Rightarrow 2 F_6 \cos \theta = 1$$

$$2 F_6 = \frac{5}{3} \Rightarrow F_6 = \frac{5}{6} t$$

Joint 15

$$\sum y = 0 \Rightarrow F_7 + 6 + F_9 \cos \theta = 0$$



$$F_7 = -6 - F_9 \cdot \frac{3}{5} \rightarrow (3)$$

Sec. Z-Z (Q.H.5)

$$\sum y = 0 \Rightarrow$$

$$3 + 6 + 6 - F_9 \cos \theta - F_9 \cos \theta - 8 = 0$$

$$\sum F_9 \cdot \frac{3}{5} = 7 \Rightarrow F_9 = \frac{35}{6} \rightarrow (4)$$

(4) in (3)

$$F_7 = -6 - \frac{35}{6} \cdot \frac{3}{5} \Rightarrow F_7 = -9.5 t$$