

Mecânica Geral - Resolução lista 2

1 - a)

$$\sum F_x = 0$$

$$F_{Ax} = 0$$

$$\sum F_y = 0$$

$$F_{Ay} + F_{By} - 16 = 0$$

$$F_{Ay} + F_{By} = 16 \text{ kN}$$

$$\sum M_A = 0$$

$$- (16 \cdot 3) + (F_{By} \cdot 5) = 0$$

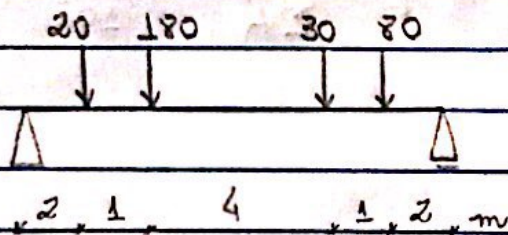
$$F_{By} \cdot 5 = 48$$

$$F_{By} = 9,6 \text{ kN}$$

$$F_{Ay} + 9,6 = 16$$

$$F_{Ay} = 6,4 \text{ kN}$$

1 - b)



$$C_{fic} = 30 \cdot 6 = 180 \text{ kN}$$

$$C_{fic} = 20 \cdot 4 = 80 \text{ kN}$$

$$\sum F_x = 0$$

$$F_{Ax} = 0$$

$$\sum F_y = 0$$

$$F_{Ay} + F_{By} - 20 - 180 - 30 - 80 = 0$$

$$F_{Ay} + F_{By} = 310 \text{ kN}$$

$$\sum M_A = 0$$

$$- (20 \cdot 2) - (180 \cdot 3) - (30 \cdot 7) - (80 \cdot 8) + (F_{By} \cdot 10) = 0$$

$$- 40 - 540 - 210 - 640 + F_{By} \cdot 10 = 0$$

$$F_{By} \cdot 10 = 1430$$

$$F_{By} = 143 \text{ kN}$$

$$F_{Ay} + 143 = 310$$

$$F_{Ay} = 167 \text{ kN}$$

2- a)

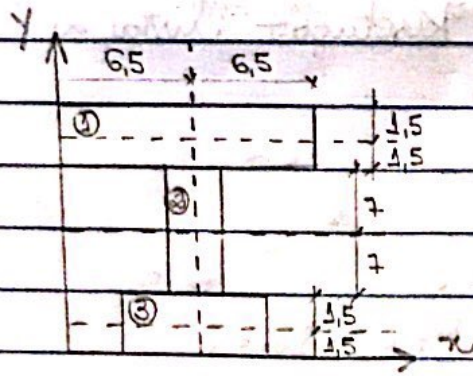


Fig.	x	y	A	$x \cdot A$	$y \cdot A$
1	6,5	18,5	39	253,5	721,5
2	6,5	10	42	273	420
3	6,5	1,5	27	175,5	40,5
		Σ	108	702	1182

$$\bar{x} = \frac{\sum x \cdot A}{\sum A} = \frac{702}{108} = 6,5 \quad \bar{y} = \frac{\sum y \cdot A}{\sum A} = \frac{1182}{108} = 10,94$$

2- b)

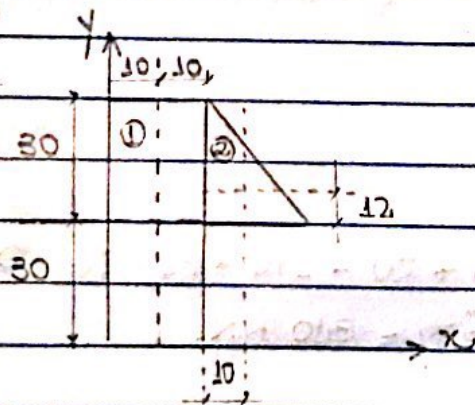


Fig.	x	y	A	$x \cdot A$	$y \cdot A$
1	10	30	1200	12000	36000
2	30	36	540	16200	19440
		Σ	1740	28200	55440

$$\bar{x} = \frac{28200}{1740} = 16,21 \text{ mm} \quad \bar{y} = \frac{55440}{1740} = 31,86 \text{ mm}$$