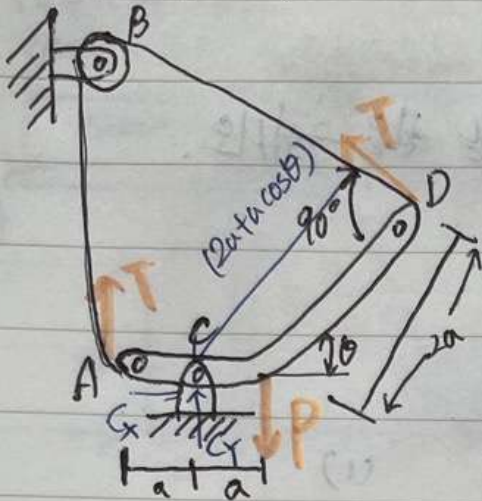


<예제 4.31>



마찰력 무시

(a) 케이블 ABD의 장력을 구하고

(b) $\theta = 60^\circ$ 일 때 C의 장력은 구하고.

$$(a) \quad \sum M_C = 0 : T(2a + a \cos \theta) - Ta + Pa = 0 \quad \therefore T = \frac{P}{1 + \cos \theta}$$

$$(b) \quad \sum F_x = 0 : C_x - T \sin \theta = 0 \quad , \quad C_x = T \sin \theta = \frac{P \sin \theta}{1 + \cos \theta}$$

$$\sum F_y = 0 : C_y + T + T \cos \theta - P = 0$$

$$C_y = P - T(1 + \cos \theta) = P - P \frac{1 + \cos \theta}{1 + \cos \theta} = 0$$

$$C_y = 0, \quad C = C_x \quad \Rightarrow \quad C = P \frac{\sin \theta}{1 + \cos \theta}$$

$$\theta = 60^\circ \text{ 일 때 } T = \frac{P}{1 + \cos 60^\circ} = \frac{2}{3} P$$

$$C = P \frac{\sin 60^\circ}{1 + \cos 60^\circ} = P \frac{0.866}{1 + \frac{1}{2}} = 0.577 P$$