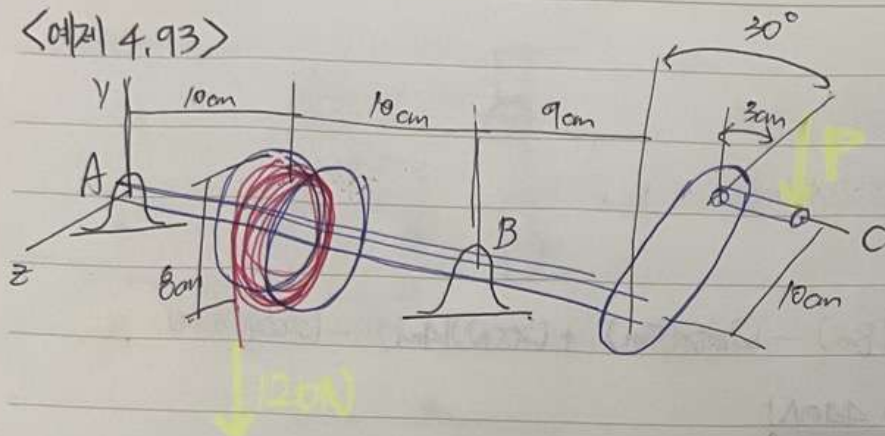
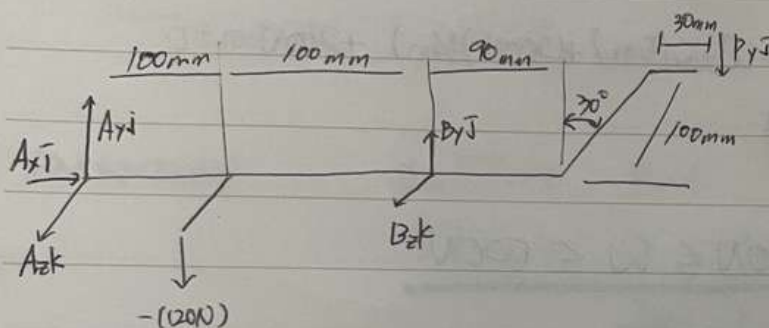


# <예제 4.93>



- (a) 판의 위치에서 평형을 유지하기 위해 C에 작용해야 하는 수직력의 크기
- (b) P의 변화량이 수직력을 받지 않다고 가정 시 A와 B의 반작용



$$r_C = (32\text{cm})\mathbf{i} + (10\text{cm})\cos 30^\circ\mathbf{j} - (10\text{cm})\sin 30^\circ\mathbf{k} = 32\mathbf{i} + 8.6603\mathbf{j} - 5\mathbf{k}$$

$$\sum M_A = 0: (10\mathbf{i} + 4\mathbf{k}) \times (-120\mathbf{j}) + (20\mathbf{i}) \times (B_y\mathbf{j} + B_z\mathbf{k}) + (32\mathbf{i} + 8.6603\mathbf{j} - 5\mathbf{k}) \times (-P\mathbf{j}) = 0$$

$$-1200\mathbf{k} + 480\mathbf{i} + 20B_y\mathbf{k} - 20B_z\mathbf{j} - 32P\mathbf{k} - 5P\mathbf{i} = 0$$

$$\mathbf{i}: 480 - 5P = 0 \quad P = 96.0\text{N}$$

$$(a) \quad P = 96.0\text{N}$$

$$\mathbf{j}: 20B_z = 0 \quad B_z = 0$$

$$\mathbf{k}: -1200 + 20B_y - 32(96.0) = 0 \quad B_y = 213.6\text{N}$$

$$\sum F_x = 0: \quad A_x = 0$$

$$\sum F_y = 0: \quad A_y - 120 + 213.6 - 96.0 = 0 \quad A_y = 2.40\text{N}$$

$$\sum F_z = 0: \quad A_z + B_z = 0 \quad A_z = -B_z = 0$$

$$(b) \quad A = (2.40\text{N})\mathbf{j} \quad B = (214\text{N})\mathbf{j}$$