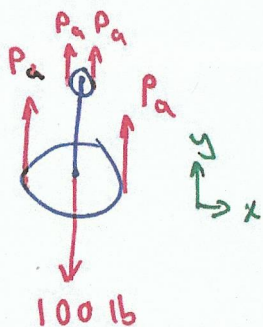


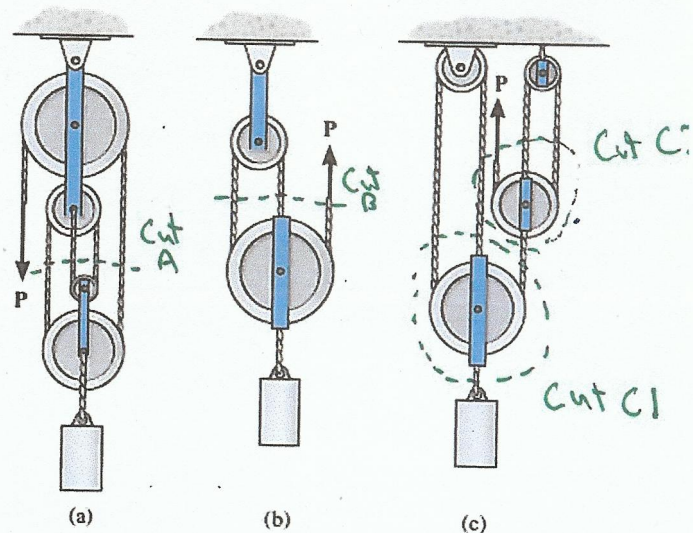
6-62

In each case, determine the force P required to maintain equilibrium. The block weighs 100 lb.

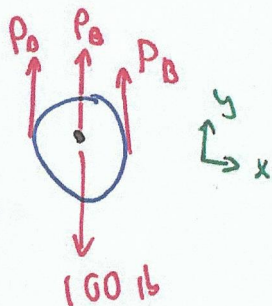
Cut A FBD



$$\begin{aligned}\uparrow \Sigma F_y &= 0 \\ 0 &= 4P_a - 100 \text{ lb} \\ \therefore P_a &= \underline{25 \text{ lb}}\end{aligned}$$

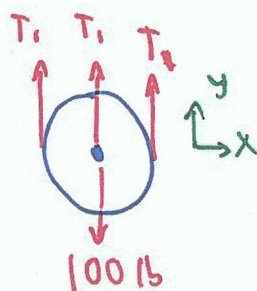


Cut B FBD



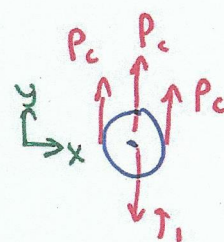
$$\begin{aligned}\uparrow \Sigma F_y &= 0 \\ 0 &= 3P_b - 100 \text{ lb} \\ \therefore P_b &= \underline{33.3 \text{ lb}}\end{aligned}$$

Cut C1 FBD



$$\begin{aligned}\uparrow \Sigma F_y &= 0 \\ 0 &= 3T_1 - 100 \text{ lb} \\ \therefore T_1 &= 33.3 \text{ lb}\end{aligned}$$

Cut C2 FBD

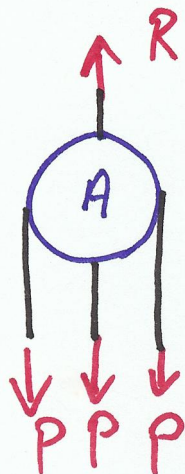


$$\begin{aligned}\uparrow \Sigma F_y &= 0 \\ 0 &= 3P_c - 33.3 \text{ lb} \\ \therefore P_c &= \underline{11.1 \text{ lb}}\end{aligned}$$

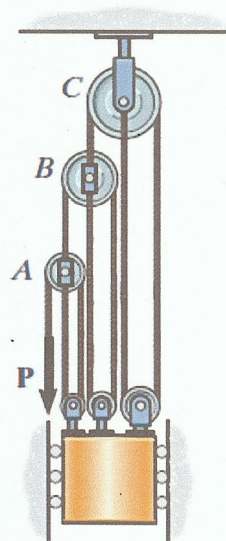
6-63.

Determine the force P required to hold the 50-kg mass in equilibrium.

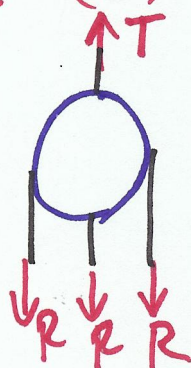
FBD 1 (A)



$$\begin{aligned}\uparrow \sum F_y &= 0 \\ R - 3P &= 0 \\ R &= 3P\end{aligned}$$

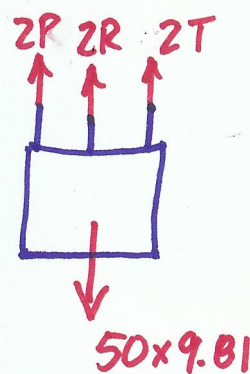


FBD 2 (B)



$$\begin{aligned}\uparrow \sum F_y &= 0 \\ T - 3R &= 0 \\ T &= 3R = 9P\end{aligned}$$

FBD 3 (Block)



$$\begin{aligned}\uparrow \sum F_y &= 0 \\ 2P + 2R + 2T - 490.5 &= 0 \\ 2(P) + 2(3P) + 2(9P) &= 490.5 \\ P &= \underline{\underline{18.9 \text{ N}}}\end{aligned}$$