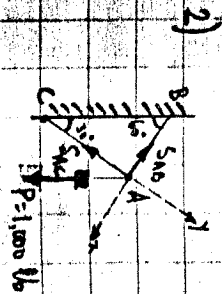


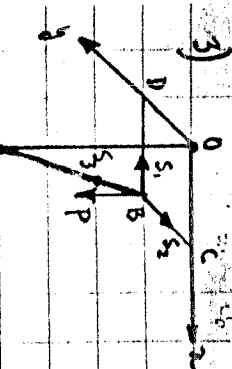
If we want be:  $564 \sin \alpha - 500 \sin 30^\circ = 0 \Rightarrow \sin \alpha = \frac{250}{564} = 0.443$

$\therefore \alpha = 26.3^\circ$  or  $153.7^\circ$



Equations of equilibrium:  $-S_{AB} + P \cos 60^\circ = 0 \Rightarrow S_{AB} = \frac{1}{2}P = 500 \text{ lb}$  (tension)

$-S_{AC} - P \sin 30^\circ = 0 \Rightarrow S_{AC} = -\frac{P\sqrt{3}}{2} = -866 \text{ lb}$  (compression)



	$x_1$	$x_2$	$x_3$	$x_4$	$F_x$	$F_y$	$F_z$
$S_1$	1	0	0	0	-1	0	0
$S_2$	0	1	0	0	0	-1	0
$S_3$	-4	-3	5	150	-566	-424	707
$P$	0	0	0	0	0	0	-1000

$P + 707 S_3 = 0 \Rightarrow S_3 = -1.4 P$

$-S_2 - 424 S_3 = 0 \Rightarrow S_2 = -6 P$

$-S_1 - 566 S_3 = 0 \Rightarrow S_1 = 8 P$

$(S_3)_x = S_3 \frac{dx}{d} = S_3 \left( \frac{-4}{150} \right) = -566 S_3$  etc.

4)  $M_B^F = M_B^{FA} \Rightarrow -600 \frac{\sqrt{2}}{2} 120 = P \frac{\sqrt{2}}{2} 160 \Rightarrow P = -600 \frac{120}{160} = -450 \text{ lb}$

$F = -P - Q \Rightarrow 600 = +450 - Q \Rightarrow Q = -150 \text{ lb}$