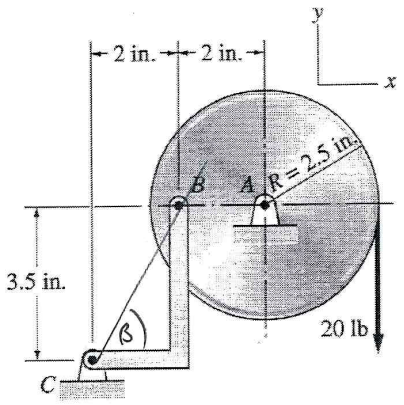
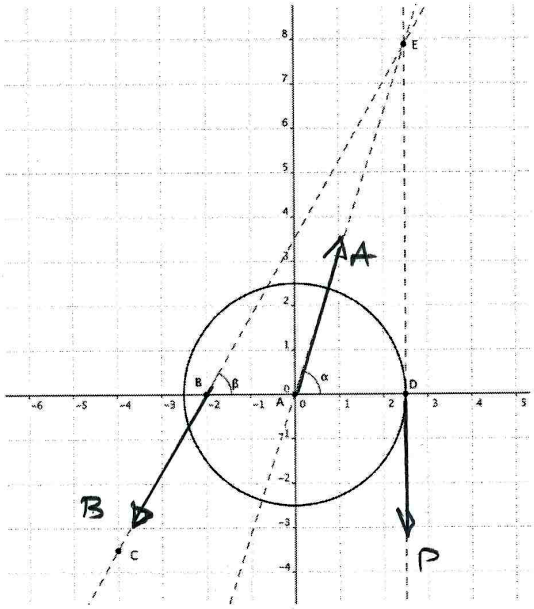
Example 1:

Using the principle of two- and three- force bodies, determine the forces acting on the cylinder at points *A* and *B*.





$\beta = \tan^{-1}\left(\frac{3.5}{2}\right) = 60.25°$

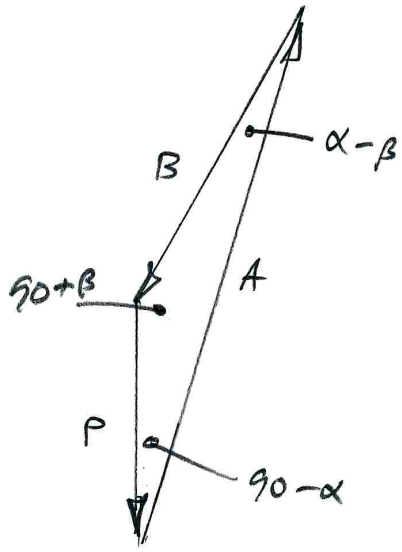
$\frac{h}{4.5} = \tan\beta \Rightarrow h = 4.5 \tan\beta$

$= 7.875''$

$\alpha = \tan^{-1}\left(\frac{h}{2.5}\right) = 72.40°$

L.O.S.

$\frac{P}{\sin\alpha-\beta} = \frac{B}{\sin 90-\alpha} = \frac{A}{\sin 90+\beta}$



$\Rightarrow$ A = 47.2 LB B = 28.7 LB