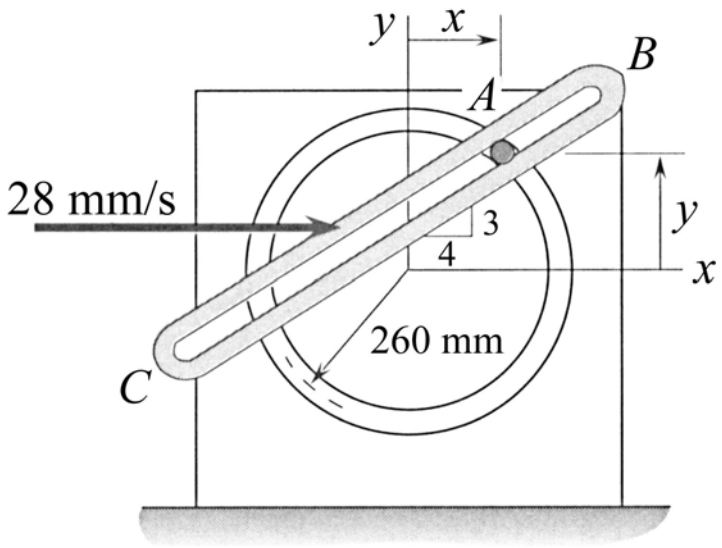
MEEG 2013 Quiz #1.m04.072

The motion of pin *A* is constrained in such a way that it remains in the inclined slot of member *BC* as well as in the circular path at all times as shown. It is known that member *BC* maintains its slope of ¾ and translates with a constant velocity of 28 mm/s →. At $t = 0$, the y intercept of the inclined slot is 40 mm. (*a*) Show that the equation of the straight line along the inclined slot at any time t is given by $4y = 3(x - 28t) + 160$. (*b*) Determine the velocity $\mathbf{v}_A$ of pin *A* when $x = 100$ mm.



$$\mathbf{v}_A = 18\mathbf{i} - 7.5\mathbf{j} \text{ mm/s}$$