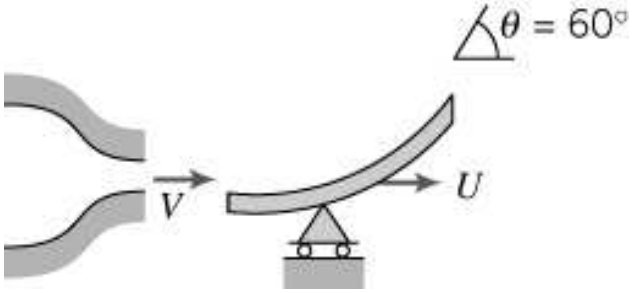
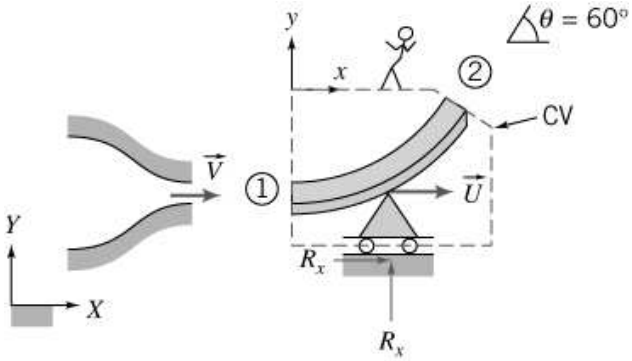
# Fluids 2011, homework #3, due on Oct 27

1. The sketch shows a vane with a turning angle of 60 degrees. The vane moves at constant speed, U=10m/s, and receives a jet of water that leaves a stationary nozzle with speed V=30m/s. The nozzle has an exit area of 0.003m^2. Determine the force components that act on the vane.




Hint: set up your control volume like this




2. A vane with a turning angle of 60 degrees is attached to a cart. The cart and vane, of mass M=7Kg, roll on a level track. Friction and air resistance may be neglected. The vane receives a jet of water that leaves a stationary nozzle with speed V=35m/s. The nozzle has an exit area of 0.003m^2. The cart's initially velocity is 0m/s, determine the velocity of the cart as a function of time.