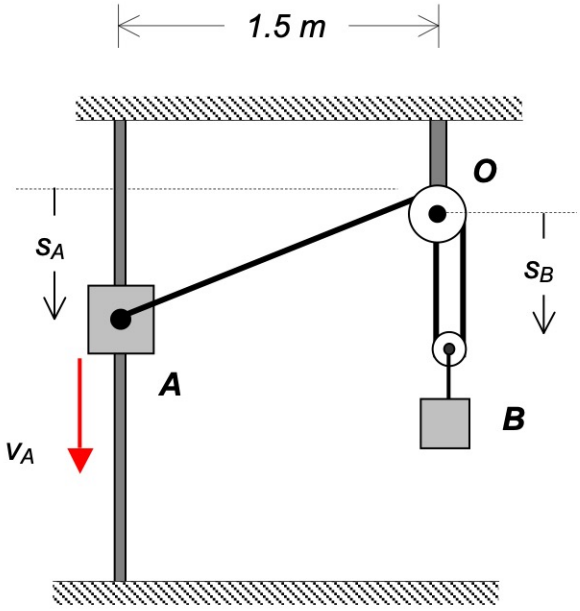
Homework H.1.I

Given: Blocks A and B are connected by the pulley-system shown below. Block A moves downward with a constant speed of v_A on a vertical guide. Assume the radii of the pulleys to be small.

Find: For this problem:

(a) Determine the speed of block B when $s_A = 0$ m.

(b) Determine the speed of block B when $s_A = 4$ m.



Use the following parameters in your analysis: $v_A = 25$ m/s.

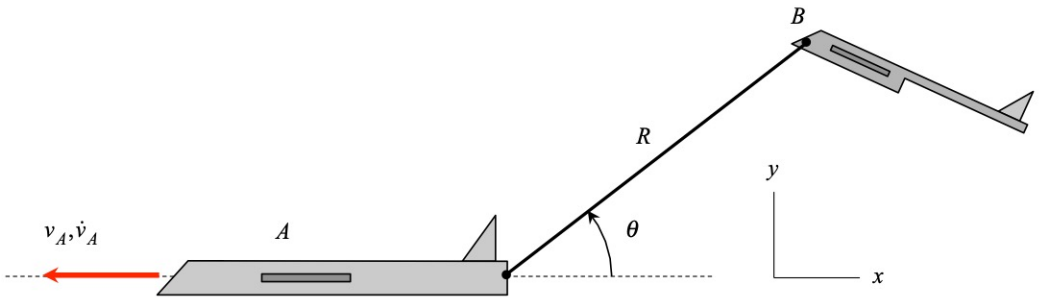
Problem H.1.J

Given: Aircraft A is traveling along a straight-line path with a speed of v_A that is increasing by an amount of $\dot{v}_A$. The aircraft is towing a glider B with a cable that has a length of R. The angle θ of the towline is increasing by a constant amount of $\dot{\theta}$.

Find: For this problem:

(a) Determine the velocity vector of the point on glider B to which the cable is attached.

(b) Determine the acceleration vector of the point on glider B to which the cable is attached.



Use the following parameters in your analysis: $R = 80$ m, $v_A = 700$ m/s, $\dot{v}_A = 4$ m/s^2 and $\theta = 20°$ and $\dot{\theta} = 0.1$ rad/s.