**Homework H1.I**

Given: Arm B moves to the right in the x-direction with a speed v_B, with this speed changing at a rate of $\dot{v}_B$. Particle P is constrained to move within a vertical slot in arm B. In addition, P is constrained to move along a fixed guide that is oriented at an angle of θ from the x-axis, as shown in the figure.

Find:

(a) Determine the velocity of P as seen by an observer that is moving with the translating arm B. Write your answer in terms of its xy-components.

(b) Determine the acceleration of P as seen by an observer that is moving with the translating arm B. Write your answer in terms of its xy-components.

HINT: Consider the direction of motion of P as seen by the observer on B.
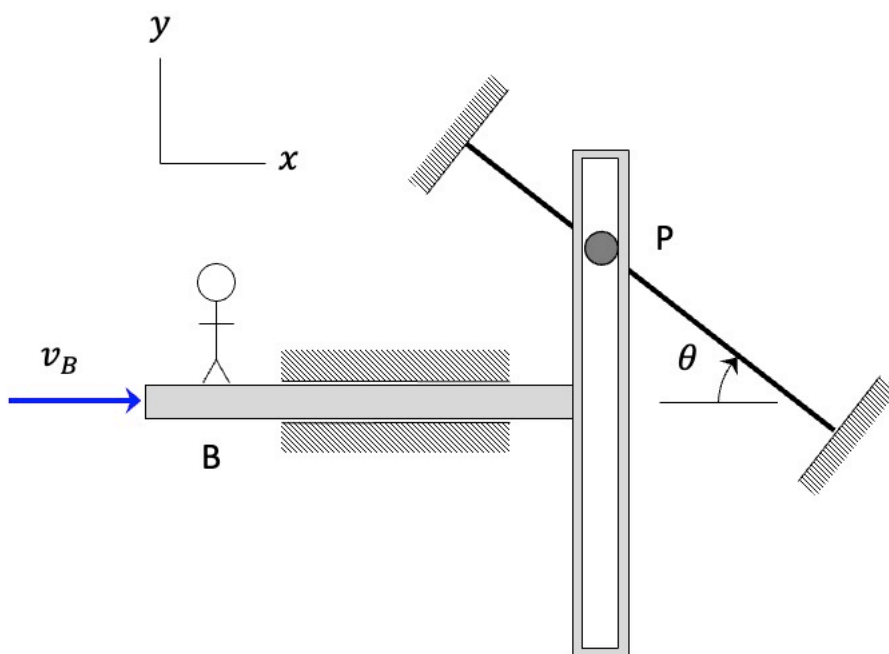
Use the following parameters in your work: $\theta = 30°$, $v_B = 10$ m/s and $\dot{v}_B = $ -4 m/s^2.