

**Problem H.1.A**

**Given:** A particle P travels on a path described by the Cartesian coordinates of  $y = cx(b - x)$ , where  $x$  and  $y$  have the units of meters. The  $x$ -component of velocity,  $\dot{x}$ , for P is constant.

**Find:** For this problem:

- (a) Make a sketch of the path of P over the range of  $0 < x < b$ .
- (b) Determine the Cartesian components of the velocity and acceleration of P at  $x = 0$ . Add a sketch of the velocity and acceleration vectors for P to your path drawn above.
- (c) Determine the Cartesian components of the velocity and acceleration of P at  $x = b/2$ . Add a sketch of the velocity and acceleration vectors for P to your path drawn above.

Use the following parameters in your analysis:  $b = 2$  m,  $c = 5/\text{m}$  and  $\dot{x} = 4$  m/s.