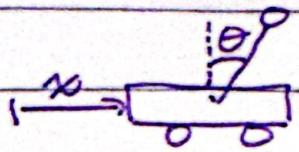
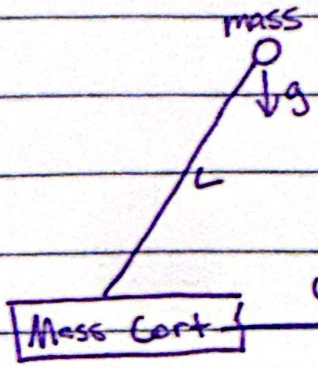


$x = \begin{bmatrix} \theta: \text{Angle of pole} \\ x: \text{Position of cart} \\ \dot{\theta}: \text{Pole velocity} \\ \dot{x}: \text{Cart Velocity} \end{bmatrix}$

(Jacobian)

$$\frac{d}{dt}x = f(x) \xrightarrow{\left.\frac{\partial f}{\partial x}\right|_{\dot{x}}} \dot{x} = Ax + Bu$$



$$\dot{x} = Ax + Bu$$