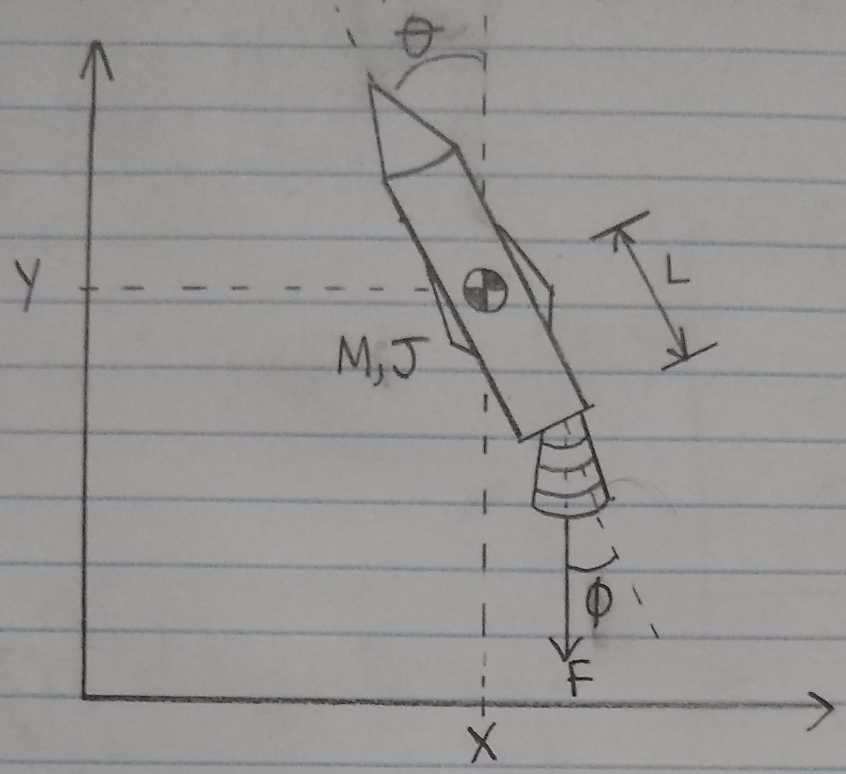
Rocket Model

$$X = [x, y, \theta, \dot{x}, \dot{y}, \dot{\theta}]^T$$ State Space



$$x(t+1) = x(t) + \dot{x}(t)\Delta t$$
$$y(t+1) = y(t) + \dot{y}(t)\Delta t$$
$$\theta(t+1) = \theta(t) + \dot{\theta}(t)\Delta t$$

$$\dot{x}(t+1) = -\frac{F(t)}{M}\sin(\theta(t) - \phi(t))\Delta t + \dot{x}(t)$$
$$\dot{y}(t+1) = \frac{F(t)}{M}\cos(\theta(t) - \phi(t))\Delta t - g\Delta t + \dot{y}(t)$$
$$\dot{\theta}(t+1) = \frac{F(t)L}{J}\sin(\phi(t))\Delta t + \dot{\theta}(t)$$

Governing Equations

$$A = [F, \phi]^T$$ Action Space

Goal: From initial conditions $\longrightarrow X = [0,0,0,0,0,0]^T$