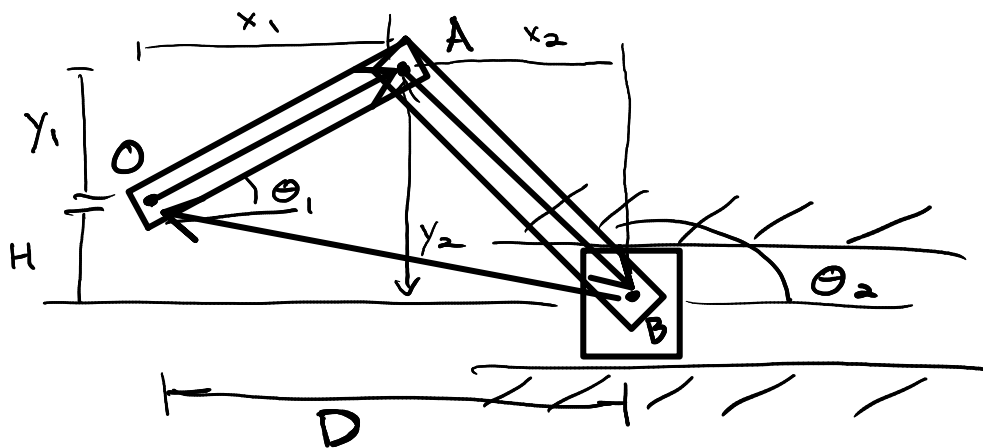


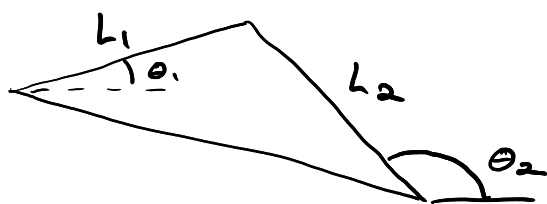
$$\vec{r}_A + \vec{r}_{B/A} + \vec{r}_{C/B} + \vec{r}_{O/C} = \vec{0}$$

$$\vec{v}_A + \vec{v}_{B/A} + \vec{v}_{C/B} + \vec{0} = \vec{0}$$



$$\vec{r}_A + \vec{r}_{B/A} = \vec{r}_B$$

$$L_1(\cos\theta_1\hat{i} + \sin\theta_1\hat{j}) + L_2(\cos\theta_2\hat{i} + \sin\theta_2\hat{j}) = D\hat{i} - H\hat{j}$$



$$x_1 + x_2 = D$$

$$y_2 - y_1 = H$$

$$\vec{r}_O = \vec{0}$$

$$\vec{r}_A = -0.2\hat{i} + 0.15\hat{j} \text{ m}$$

$$\dot{\theta}_1 = 10 \text{ rad/s}$$

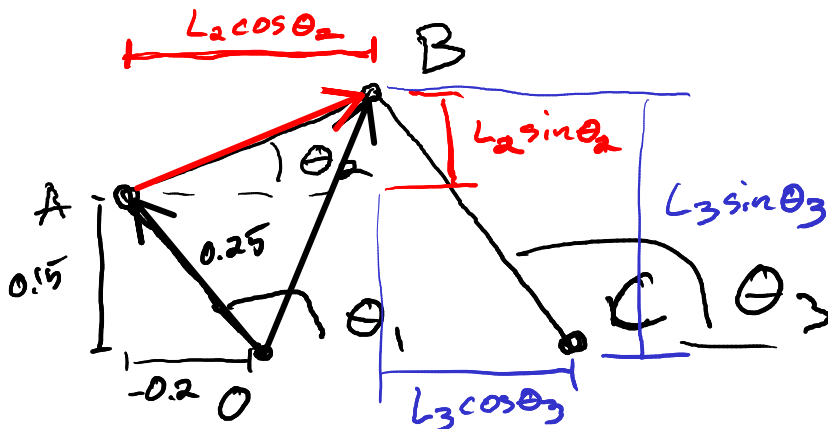
$$\vec{r}_B = 0.494\hat{i} + 0.863\hat{j} \text{ m}$$

$$\vec{r}_C = 1\hat{i} + 0\hat{j}$$

$$\vec{r}_A = L_1 \cos \theta_1 \hat{i} + L_1 \sin \theta_1 \hat{j}$$

$$\vec{r}_{B/A} = L_2 \cos \theta_2 \hat{i} + L_2 \sin \theta_2 \hat{j}$$

$$\vec{r}_{B/C} = L_3 \cos \theta_3 \hat{i} + L_3 \sin \theta_3 \hat{j}$$



$$\theta_1 = \rightarrow \quad \cos \theta_1 = \frac{-0.2 \text{ m}}{0.25 \text{ m}} \quad \sin \theta_1 = \frac{0.15 \text{ m}}{0.25 \text{ m}}$$

$$\theta_2 = \rightarrow \quad \cos \theta_2 = \frac{0.494 + 0.2 \text{ m}}{1 \text{ m}} \quad \sin \theta_2 = \frac{0.863 - 0.15 \text{ m}}{1 \text{ m}}$$

$$\theta_3 = \rightarrow \quad \cos \theta_3 = \frac{0.494 - 1 \text{ m}}{1 \text{ m}} \quad \sin \theta_3 = \frac{0.863 - 0 \text{ m}}{1 \text{ m}}$$

position

$$L_1 \cos \theta_1 + L_2 \cos \theta_2 - L_3 \cos \theta_3 = 1$$

$$L_1 \sin \theta_1 + L_2 \sin \theta_2 - L_3 \sin \theta_3 = 0$$

velocity

$$L_1 \dot{\theta}_1 \sin \theta_1 + L_2 \dot{\theta}_2 \sin \theta_2 - L_3 \dot{\theta}_3 \sin \theta_3 = 0$$

$$\hookrightarrow L_1 \dot{\theta}_1 \cos \theta_1 + L_2 \dot{\theta}_2 \cos \theta_2 - L_3 \dot{\theta}_3 \cos \theta_3 = 0$$

$$\textcircled{1} \quad \left(0.25 \cdot 10 \frac{\text{rad}}{\text{s}}\right) \left(\frac{0.15}{0.25}\right) + 1 \text{ m } \ddot{\theta}_2 \left(\frac{0.863-0.15}{1}\right) - 1 \text{ m } \dot{\theta}_3 \left(\frac{0.863}{1}\right) = 0$$

$$\textcircled{2} \quad \left(0.25 \cdot 10 \frac{\text{rad}}{\text{s}}\right) \left(\frac{-0.2}{0.25}\right) + 1 \text{ m } \ddot{\theta}_2 \left(\frac{0.49+0.2}{1}\right) - 1 \text{ m } \ddot{\theta}_3 \left(\frac{0.494-1}{1}\right) = 0$$