

pist on - crank



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

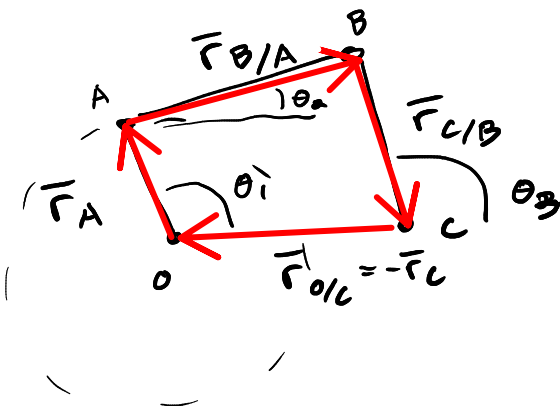
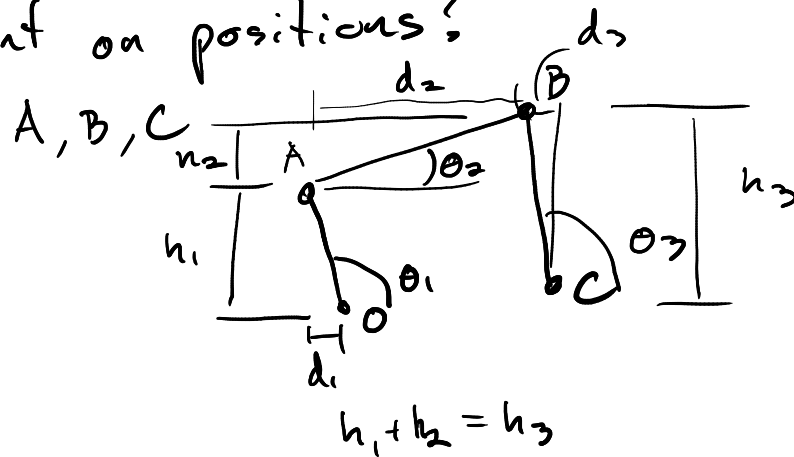
$$\vec{r}_A = -0.2\hat{i} + 0.15\hat{j}$$

$$\vec{r}_B = 0.5\hat{i} + 0.86\hat{j}$$

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

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

constraint on positions?



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

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

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

$$-\vec{r}_C = \vec{r}_{O/C} = -dx\hat{i}$$

$$\boxed{\vec{r}_A + \vec{r}_{B/A} + \vec{r}_{C/B} + \vec{r}_{O/C} = 0\hat{i} + 0\hat{j}} \leftarrow \text{position constraint}$$

$$\hat{i} \rightarrow L_1 \cos \theta_1 + L_2 \cos \theta_2 - L_3 \cos \theta_3 - d_x = 0$$

$$\hat{j} \rightarrow L_1 \sin \theta_1 + L_2 \sin \theta_2 - L_3 \sin \theta_3 = 0$$

$$\vec{v}_A, \vec{v}_{B/A}, \vec{v}_{C/B}, \vec{v}_{O/C}$$

? ? ? ?

Quick refresh

$\vec{r}_A \equiv$ position of A

$\vec{v}_A \equiv$ velocity of A = $\frac{d\vec{r}_A}{dt}$

$$\frac{d}{dt} [\vec{r}_A + \vec{r}_{B/A} + \vec{r}_{C/B} + \vec{r}_{O/C} = \vec{0}]$$

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