$l_1 = 0.25\ m,\ l_2 = 1\ m,\ l_3 = 1\ m$

$dx = 1\ m\ and\ dy = -0.25\ m$ ~~-0.25~~
-0.5

at time, t, link 1 (OA) is rotating at 10 rad/s. The positions of the pins are as follows
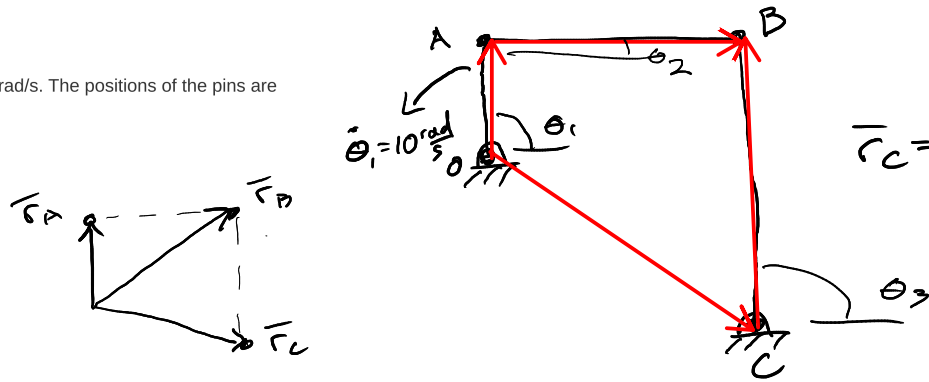
$r_0 = 0\hat{i} + 0\hat{j}$ [m]

$r_A = 0\hat{i} + 0.25\hat{j}$ [m]

$r_B = 0.968\hat{i} + 0.499\hat{j}$ [m]

$r_C = 1\hat{i} - 0.5\hat{j}$ [m] ✓

$\overline{r_C} = dx\hat{i} + dy\hat{j}$

$\sin\theta_1 = \dfrac{0.25}{0.25} \quad \cos\theta_1 = \dfrac{0}{0.25}$

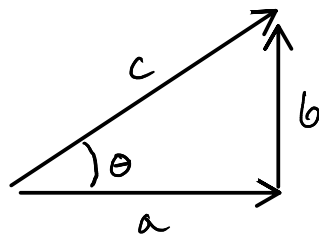$\sin\theta_2 = \dfrac{0.5 - 0.25}{1} \quad \cos\theta_2 = \dfrac{0.968}{1}$

$\sin\theta_3 = \dfrac{1}{1} \quad \cos\theta_3 = \dfrac{0.968 - 1}{1}$

$$\overline{r}_{A/0} + \overline{r}_{B/A} = \overline{r}_{C/0} + \overline{r}_{B/C}$$

$x \rightarrow l_1\cos\theta_1 + l_2\cos\theta_2 = d_x + l_3\cos\theta_3$

$y \rightarrow l_1\sin\theta_1 + l_2\sin\theta_2 = d_y + l_3\sin\theta_3$

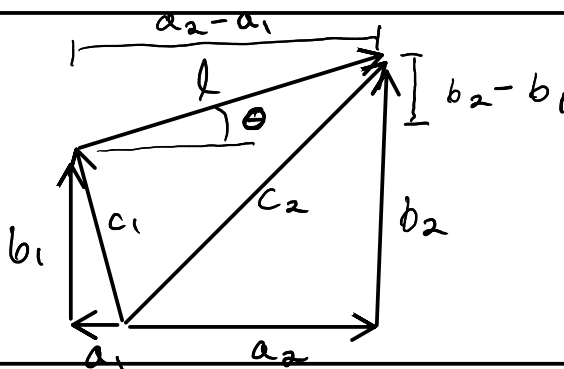$v_x \rightarrow l_1\dot\theta_1\sin\theta_1 + l_2\dot\theta_2\sin\theta_2 = 0 + l_3\dot\theta_3\sin\theta_3$

$v_y \rightarrow l_1\dot\theta_2\cos\theta_1 + l_2\dot\theta_2\cos\theta_2 = 0 + l_3\dot\theta_3\cos\theta_3$

note:

$\sin\theta = \dfrac{b}{c}$

$\cos\theta = \dfrac{a}{c}$

$\sin\theta = \dfrac{b_2 - b_1}{l}$

$\cos\theta = \dfrac{a_2 - a_1}{l}$

F

L₁   L₂

30mm   θ₂   R

θ₁

40mm   30mm

F   R=∞   θ₁ = 0°

F

30mm   √2·30mm

θ₁   R