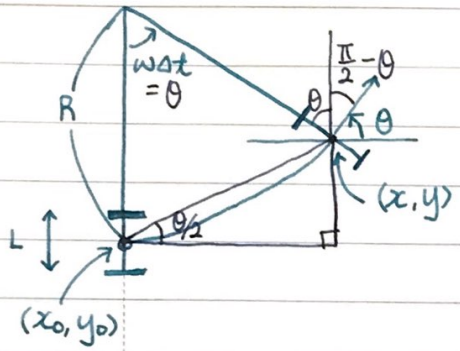

학번 2018142059
이름 김서영.

	(x_0, y_0)	→	(x, y)
Robot Position			
Robot Direction	0		θ

θ 구하기

$V = \omega R$.

$\omega \Delta t = \theta$

$V_R = \omega(R + L/2)$

$V_L = \omega(R - L/2)$

$$\Rightarrow \omega = \frac{V_R - V_L}{L} \quad \Rightarrow \theta = \frac{V_R - V_L}{L} \Delta t$$

R 구하기

$$V_R + V_L = 2\omega R \Rightarrow R = \frac{V_R + V_L}{2\omega} = \frac{(V_R + V_L)L}{2(V_R - V_L)}$$

x 구하기

$\omega \Delta t = \theta$

$$x - x_0 = \left(R \cdot \sin\left(\frac{\theta}{2}\right) \cdot 2\right) \cdot \cos\left(\frac{\theta}{2}\right)$$

$$= R\sin\theta$$

$$\therefore x = x_0 + R\sin\theta = x_0 + \frac{L(V_R + V_L)}{2(V_R - V_L)} \sin\left(\frac{V_R - V_L}{L} \Delta t\right)$$

y 구하기

$$y - y_0 = \left(R \cdot \sin\left(\frac{\theta}{2}\right) \cdot 2\right) \cdot \sin\left(\frac{\theta}{2}\right)$$

$$= R \cdot (1 - \cos\theta)$$

$$\therefore y = y_0 + R(1 - \cos\theta) = y_0 + \frac{L(V_R + V_L)}{2(V_R - V_L)} \left(1 - \cos\left(\frac{V_R - V_L}{L} \Delta t\right)\right)$$

$$\therefore \begin{cases} x = x_0 + \dfrac{L(V_R + V_L)}{2(V_R - V_L)} \sin\left(\dfrac{V_R - V_L}{L} \Delta t\right) \\ y = y_0 + \dfrac{L(V_R + V_L)}{2(V_R - V_L)} \left(1 - \cos\left(\dfrac{V_R - V_L}{L} \Delta t\right)\right) \\ \theta = \dfrac{V_R - V_L}{L} \Delta t. \end{cases}$$