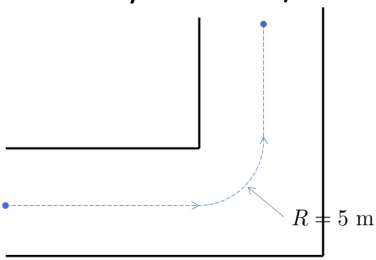
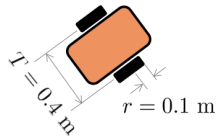
Ex3) 2W Robot Control

- How do we control each wheel (u_ℓ, u_r) to generate the following turning motion while keeping the forward velocity at $v = 1$ m/s?





$$R = \frac{V}{\omega} \Rightarrow \omega = \frac{v}{R} = \frac{1}{5} \text{ rad/s}$$

$$v = r\frac{u_r + u_\ell}{2}, \quad \omega = r\frac{u_r - u_\ell}{T} \Rightarrow$$

$$u_r + u_\ell = \frac{2v}{r} = \frac{2}{0.1} \cdot 1 = 20$$

$$u_r - u_\ell = \frac{T\omega}{r} = \frac{0.4 \cdot \frac{1}{5}}{0.1} = 0.8$$

$$\therefore \boxed{\begin{aligned} u_r &= 10.4 \text{ rad/s} \\ u_\ell &= 9.6 \text{ rad/s} \end{aligned}}$$