Cinématique dans notre référentiel

wheel radius (m) — wheel rot speed (rad/s)

$$V_R = \begin{bmatrix} \dot{\theta} \\ \dot{x} \\ \dot{y} \end{bmatrix} = \begin{bmatrix} +\frac{r}{3d}\left(u_B + u_L + u_R\right) \\ +r\left(-\frac{1}{2\sin\left(\frac{\pi}{3}\right)}u_L + \frac{1}{2\sin\left(\frac{\pi}{3}\right)}u_R\right) \\ -r\left(\frac{2}{3}u_B - \frac{1}{3}u_L - \frac{1}{3}u_R\right) \end{bmatrix}$$

(wheel to center (m))

- (Sum x_L) = notre y
- (Sum y_L) = notre x

IK:

$$u = \begin{cases} u_1 = u_B \\ u_2 = u_L \\ u_3 = u_R \end{cases} = \frac{1}{r}\begin{bmatrix} -d & 1 & 0 \\ -d & -\frac{1}{2} & -\sin\left(\frac{\pi}{3}\right) \\ -d & -\frac{1}{2} & \sin\left(\frac{\pi}{3}\right) \end{bmatrix}\begin{bmatrix} -\dot{\theta} \\ -\dot{y} \\ \dot{x} \end{bmatrix}$$

$$= \frac{1}{r}\begin{bmatrix} d\dot{\theta} - \dot{y} \\ d\dot{\theta} + \frac{1}{2}\dot{y} - \sin\left(\frac{\pi}{3}\right)\dot{x} \\ d\dot{\theta} \quad \frac{1}{2}\sin\left(\frac{\pi}{3}\right)\dot{y} \quad \sin\left(\frac{\pi}{3}\right)\dot{x} \end{bmatrix}$$