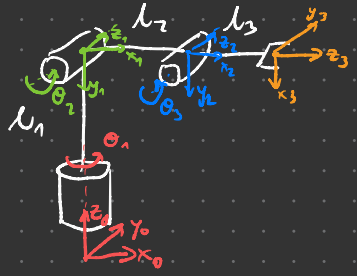
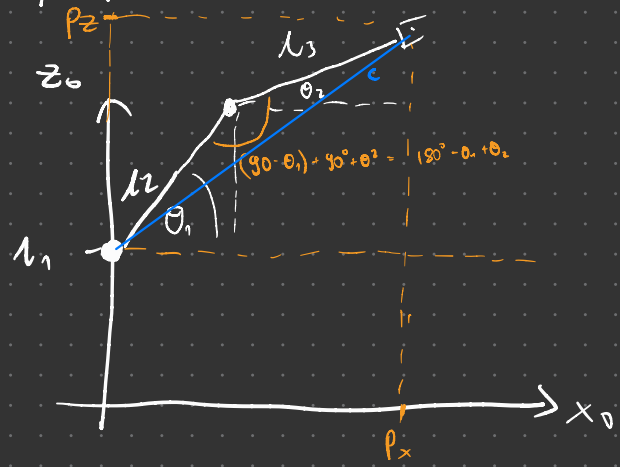


i	θ	d	a	α
1	θ_1	l_1	0	$-\frac{\pi}{2}$
2	$-\theta_2$	0	l_2	0
3	$-\theta_3+\frac{\pi}{2}$	0	l_3	$\frac{\pi}{2}$

$(p_x, p_y, p_z) \rightarrow q = ?$

$\theta_1 = \operatorname{atan2}(p_y, p_x)$



$$c = \sqrt{l_2^2 + l_3^2 + 2 l_1 l_3 \cos(\theta_2 - \theta_1)}$$

$$c^2 = p_x^2 + (p_z - l_1)^2$$

$$p_x^2 + (p_z - l_1)^2 = l_2^2 + l_3^2 + 2 l_2 l_3 \cos(\theta_2 - \theta_1)$$

$$\cos(\theta_2 - \theta_1) = \frac{p_x^2 + (p_z - l_1)^2 - l_2^2 - l_3^2}{2 l_2 l_3}$$

$$\theta_2 - \theta_1 = \pm \arccos\left(\frac{p_x^2 + (p_z - l_1)^2 - l_2^2 - l_3^2}{2 l_2 l_3}\right)$$