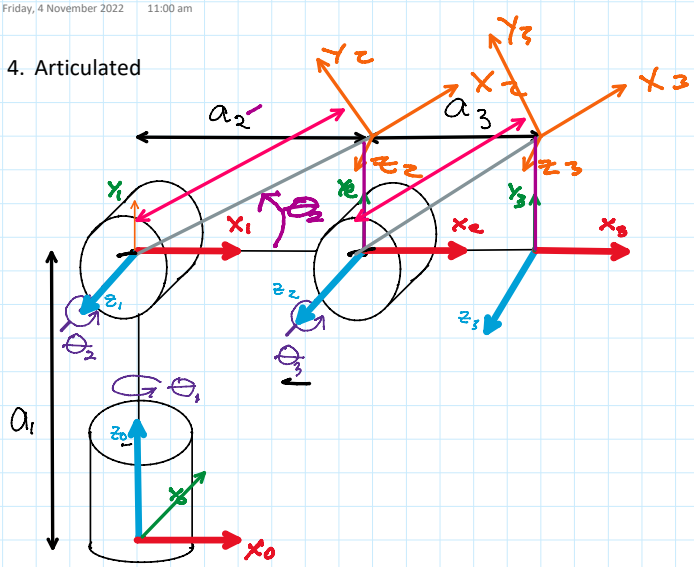
Position Vectors of Articulated Manipulator

Friday, 4 November 2022 11:00 am

4. Articulated



SOH CAH TOA

$$ {}^0_1P = \begin{bmatrix} 0 \\ 0 \\ a_1 \end{bmatrix} \begin{matrix} {}^0_1X \\ {}^0_1Y \\ {}^0_1Z \end{matrix} $$

$$ \frac{X_1}{a_2} = C\theta_2 $$

$$ {}^1_2P = \begin{bmatrix} a_2C\theta_2 \\ a_2S\theta_2 \\ 0 \end{bmatrix} \begin{matrix} {}^1_2X \\ {}^1_2Y \\ {}^1_2Z \end{matrix} $$

$a_2 \rightarrow H$
$Y_1 \rightarrow O$
$X_1 \rightarrow A$

$$ X_1 = a_2C\theta_2 $$

$$ Y_1 = a_2S\theta_2 $$

$$ \frac{Y_1}{a_2} = S\theta_2 $$

$$ {}^2_3P = \begin{bmatrix} a_3C\theta_3 \\ a_3S\theta_3 \\ 0 \end{bmatrix} \begin{matrix} {}^2_3X \\ {}^2_3Y \\ {}^2_3Z \end{matrix} $$

$a_3 \rightarrow H$
$Y_2 \rightarrow O$
$X_2 \rightarrow A$

$$ X_2 = a_3C\theta_3 $$

$$ Y_2 = a_3S\theta_3 $$