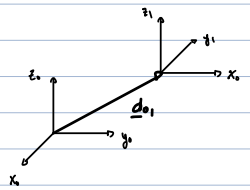
$$ {}^0\underline{\underline{T}}_1 = \begin{bmatrix} {}^0\underline{\underline{R}}_1 & {}^0\underline{d}_{01} \\ \underline{0}^T & 1 \end{bmatrix} = \begin{bmatrix} {}^0\underline{x}_1 & {}^0\underline{y}_1 & {}^0\underline{z}_1 & {}^0\underline{d}_{01} \\ 0 & 0 & 0 & 1 \end{bmatrix} $$



WE CAN WRITE MANY OF THESE BY INSPECTION IF THEY'RE NICE

$$ \rightsquigarrow {}^0\underline{\underline{T}}_1 \begin{bmatrix} 0 & -1 & 0 & 0 \\ 1 & 0 & 0 & 1.5 \\ 0 & 0 & 1 & 1 \\ 0 & 0 & 0 & 1 \end{bmatrix} $$

HOMOGENEOUS OPERATOR

$$ \left({}^0\underline{\underline{T}}_1\right)^{-1} $$ ISN'T EASY

ORIENTATIONS

- TAKES 3 #'s TO WRITE ORIENTATION

$$ {}^0\underline{\underline{R}}_1 = \{ r_{ij} \} = \left[{}^0\underline{x}_1 \;\; {}^0\underline{y}_1 \;\; {}^0\underline{z}_1 \right] $$

↑ THESE ARE ORTHOGONAL UNIT VECTORS

(6 CONSTRAINTS)

9 UNKNOWNS, 6 EQNS

⇒ 3 #'s FOR ORIENTATION