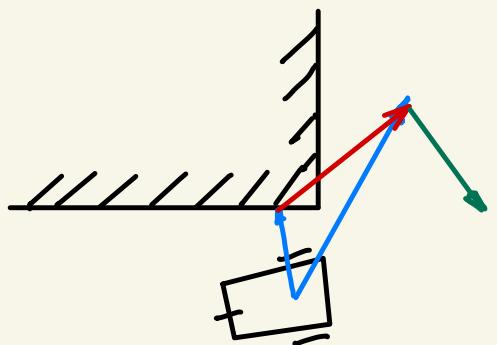
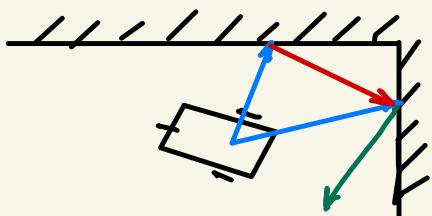
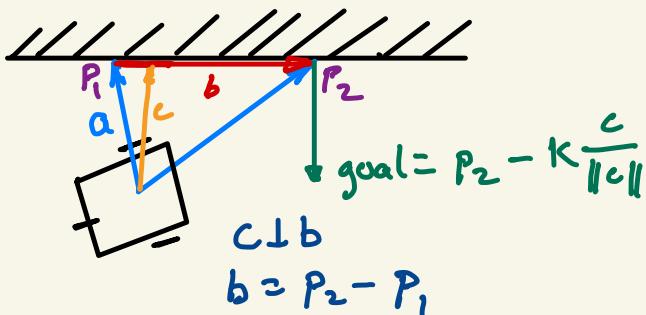


Wall Following Vectors



$$\begin{aligned} & \hat{b} = \frac{b}{\|b\|} \quad c \perp b \\ & c = a + x \hat{b} \quad \textcircled{1} \\ & c \perp \hat{b} \Rightarrow \hat{b}^T c = 0 \\ & \hat{b}^T (a + x \hat{b}) = 0 \quad \textcircled{2} \\ & \hat{b}^T a + x \hat{b}^T \hat{b} = 0 \\ & x = -\hat{b}^T a \end{aligned}$$

$$\begin{aligned} & \hat{b}^T a + x = 0, \quad x = -\hat{b}^T a \\ & c = a - \hat{b}^T a \hat{b} = a - a^T \hat{b} \hat{b} \end{aligned}$$