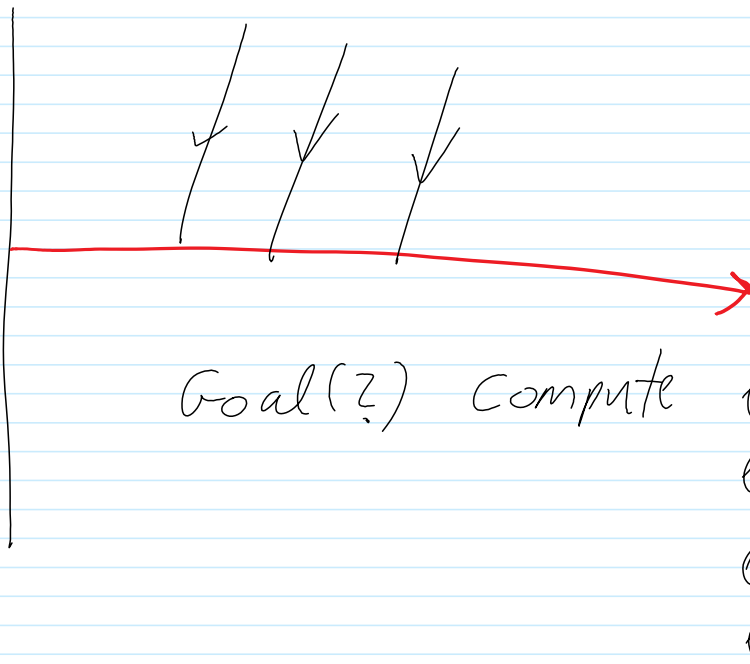


## Scratch

April-12-15 12:28 PM

$$\left[ \begin{pmatrix} 1 & 1-t_i \\ 0 & t_i \end{pmatrix}, \begin{pmatrix} t_j & 0 \\ 1-t_j & 1 \end{pmatrix} \right] = \begin{matrix} \text{irrelevant,} \\ a_{12} \text{ \& } a_{21}, \\ \text{do not} \\ \text{commute.} \end{matrix}$$

$$\begin{pmatrix} 1 & 1-t_i \\ 0 & t_i \end{pmatrix} \begin{pmatrix} t_j & 0 \\ 1-t_j & 1 \end{pmatrix} = \begin{pmatrix} 1-t_i+t_j & 0 \\ 0 & t_i \end{pmatrix}$$



Q Suppose  $[\cdot, \cdot]_\epsilon$  is an  $\epsilon$ -dependent Lie bracket. Compute

$$\frac{d}{d\epsilon} e^{\text{ad}_\epsilon X}(y) \Big|_{\epsilon=0}$$