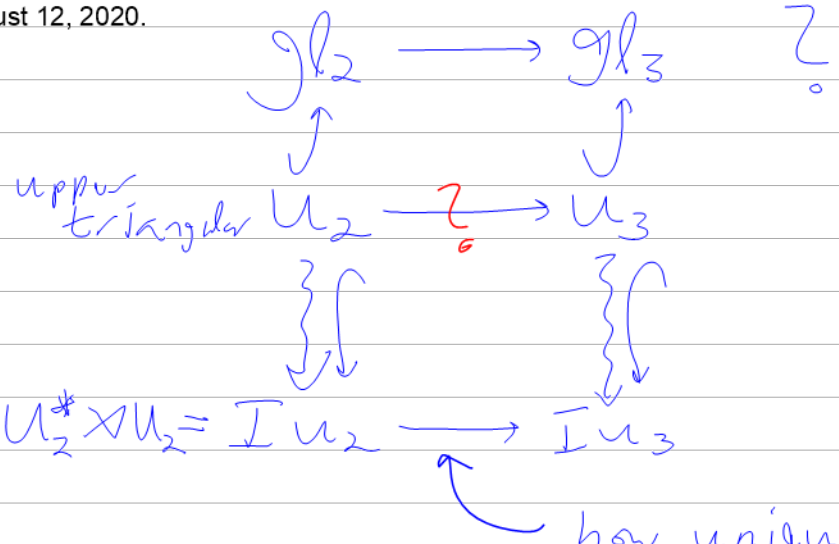
August 12, 2020.



$U_2 \longrightarrow U_3$

$\begin{pmatrix} 0 & 1 \\ 0 & 0 \end{pmatrix} \longrightarrow \begin{pmatrix} 0 & \cdot & \cdot \\ 2 & \cdot & \cdot \\ 0 & \cdot & \cdot \end{pmatrix}$

$\begin{pmatrix} 1 & 0 \\ 0 & 0 \end{pmatrix} \longrightarrow \begin{pmatrix} & & \\ & & \\ & & \end{pmatrix}$

$\begin{pmatrix} 0 & 0 \\ 0 & 1 \end{pmatrix} \longrightarrow \begin{pmatrix} & & \\ & & \\ & & \end{pmatrix}$

$x^2 \longmapsto 2(ax+by)x =$

$\begin{pmatrix} a & b \\ c & d \end{pmatrix} = \begin{pmatrix} 0 & 1 \\ 0 & 0 \end{pmatrix}$

$= 2yx$

$\begin{pmatrix} x \\ y \end{pmatrix} \longmapsto \begin{pmatrix} a & b \\ c & d \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} ax+by \\ cx+dy \end{pmatrix}$

$x^2 \longmapsto (ax+by)^2$

xy
y^2

$(x\ y) \longmapsto (x\ y) \begin{pmatrix} a & b \\ c & d \end{pmatrix}$

$g \in G \subset V \otimes W$

$g(v \otimes w) = gv \otimes gw$

$\gamma \in \mathfrak{g} \subset V \otimes W$

$\gamma(v \otimes w) = (\gamma v) \otimes w + v \otimes (\gamma w)$