

$$[H, E] = 2E, [H, F] = -2F$$

$$[E, F] = H$$

\* Killing form:

$$K(X, Y) = \text{trace}(\text{ad } X \circ \text{ad } Y)$$

$$\text{ad } E = \begin{bmatrix} 0 & -2 & 0 \\ 0 & 0 & 1 \\ 0 & 0 & 0 \end{bmatrix}$$

$$\text{ad } F = \begin{bmatrix} 0 & 0 & 0 \\ -1 & 0 & 0 \\ 0 & 2 & 0 \end{bmatrix}, \text{ad } H = \begin{bmatrix} 2 & 0 & 0 \\ 0 & 0 & 0 \\ 0 & 0 & -2 \end{bmatrix}$$

$$[K(x_i, x_j)]_{1 \leq i, j \leq 3}$$

$$= \begin{bmatrix} 0 & 0 & 4 \\ 0 & 8 & 0 \\ 4 & 0 & 0 \end{bmatrix} \rightarrow$$

How please?