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In[•]:= g1 = {{0, 1, 0}, {1, 0, 0}, {0, 0, 0}} / 2;
g2 = {{0, -1, 0}, {1, 0, 0}, {0, 0, 0}} / 2;
g3 = {{1, 0, 0}, {0, -1, 0}, {0, 0, 0}} / 2;
g4 = {{0, 0, 1}, {0, 0, 0}, {1, 0, 0}} / 2;
g5 = {{0, 0, -1}, {0, 0, 0}, {1, 0, 0}} / 2;
g6 = {{0, 0, 0}, {0, 0, 1}, {0, 1, 0}} / 2;
g7 = {{0, 0, 0}, {0, 0, -1}, {0, 1, 0}} / 2;
g8 = {{1, 0, 0}, {0, 1, 0}, {0, 0, -2}} / Sqrt[12];

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In[•]:= λ = {g1, g2, g3, g4, g5, g6, g7, g8};

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In[•]:= (#.#) & /@λ // Total // MatrixForm

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Out[•]//MatrixForm=

$$\begin{pmatrix} \frac{4}{3} & 0 & 0 \\ 0 & \frac{4}{3} & 0 \\ 0 & 0 & \frac{4}{3} \end{pmatrix}$$

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In[•]:= comm[x_, y_] := x.y - y.x;
f[a_, b_, c_] :=  $\frac{1}{2i}$  Tr[comm[λ[a], λ[b]].λ[c]];

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In[•]:= f[2, 5, 7]

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Out[•]=  $\frac{1}{8}$

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In[•]:= f[2, 7, 5]

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Out[•]=  $-\frac{1}{8}$