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In[1]:=  $\sigma_0 = \text{IdentityMatrix}[2]; \sigma_1 = \{\{0, 1\}, \{1, 0\}\};$ 
 $\sigma_2 = \{\{0, -I\}, \{I, 0\}\}; \sigma_3 = \{\{1, 0\}, \{0, -1\}\};$ 
```

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In[2]:=  $\sigma[k\_ ] := \begin{cases} \sigma_0 & k == 0 \\ \sigma_1 & k == 1 \\ \sigma_2 & k == 2 \\ \sigma_3 & k == 3 \end{cases}$ 
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In[3]:=  $\gamma[k\_ ] := \{\{\{0, 0\}, \{0, 0\}\}, \sigma[k], \{-\sigma[k], \{0, 0\}, \{0, 0\}\}\} // \text{ArrayFlatten}$ 
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```
In[4]:=  $\text{Table}[\gamma[i] // \text{MatrixForm}, \{i, 0, 3\}] // \text{TableForm}$ 
```

Out[4]/TableForm=

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

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

$$\begin{pmatrix} 0 & 0 & 0 & -i \\ 0 & 0 & i & 0 \\ 0 & i & 0 & 0 \\ -i & 0 & 0 & 0 \end{pmatrix}$$

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

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In[5]:=  $I \gamma[0] \cdot \gamma[1] \cdot \gamma[2] \cdot \gamma[3] // \text{MatrixForm}$ 
```

Out[5]/MatrixForm=

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