1. On page 8 of Tinkham, you will find an example of 2-dimension representation of the triangular group described by Fig. 2-1 and the multiplication table in the previous page. Consider the following alternative 2-dimension representation:

\[ E = \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}, \quad A = \begin{pmatrix} -1 & 0 \\ 0 & 1 \end{pmatrix}, \quad B = \begin{pmatrix} \frac{1}{2} & \frac{3}{2} \\ \frac{1}{2} & -\frac{1}{2} \end{pmatrix}, \quad C = \begin{pmatrix} \frac{1}{2} & -\frac{3}{2} \\ -\frac{1}{2} & -\frac{1}{2} \end{pmatrix}, \]

\[ D = \begin{pmatrix} -\frac{1}{2} & -\frac{3}{2} \\ \frac{1}{2} & \frac{1}{2} \end{pmatrix}, \quad F = \begin{pmatrix} -\frac{1}{2} & \frac{3}{2} \\ \frac{1}{2} & -\frac{1}{2} \end{pmatrix} \]

(a) Show that this alternative representation satisfies the group multiplication table.

(b) If the alternative representation is not unitary, use the procedure described in Section 3-2 of your text to transform it into a unitary transformation.