Exercise 2.3:

Choose the constant c in the matrix

$$\begin{pmatrix} c & 0 & 6 \\ 0 & c & 4 \\ 0 & 0 & c \end{pmatrix}$$

in such a way that the matrix represents a translation by the vector $(3, 2)^\top$ in homogeneous coordinates.

Solution (sketch):

$$\begin{pmatrix} c & 0 & 6 \\ 0 & c & 4 \\ 0 & 0 & c \end{pmatrix} \begin{pmatrix} 0 \\ 0 \\ 1 \end{pmatrix} = \begin{pmatrix} 6 \\ 4 \\ c \end{pmatrix}$$

Therefore, $c = 2$.