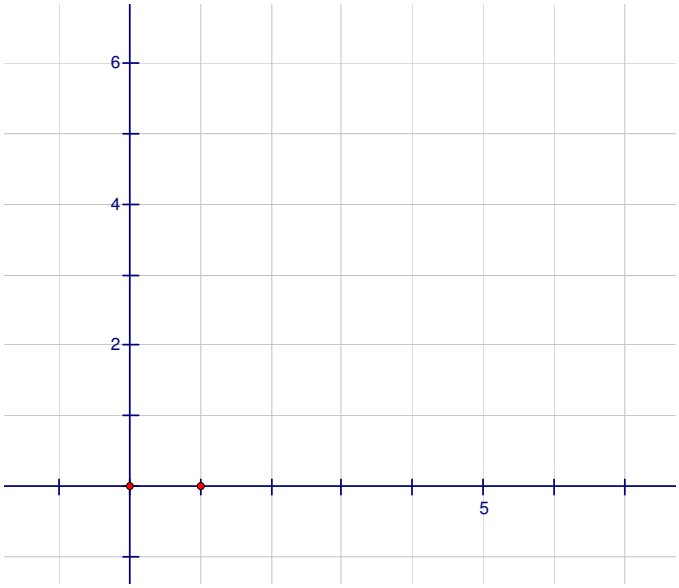
Practice Exercise (Exercises 4.6: #7)

Consider the affine transformation T:$\mathbf{E}^2 \xrightarrow{onto} \mathbf{E}^2$ defined by

$$T\left(\begin{bmatrix} x \\ y \\ 1 \end{bmatrix}\right) = \begin{bmatrix} 1 & 2 & 3 \\ 3 & 2 & 1 \\ 0 & 0 & 1 \end{bmatrix}\begin{bmatrix} x \\ y \\ 1 \end{bmatrix}.$$

Sketch the image of the unit square under T.



Express T as the composition of a direct similarity, strain, and a shear.

Does *T* have invariant points?

Does *T* have invariant lines?