

Give complete solutions to the following problems. Be sure to provide all the necessary steps to support your answers.

1. What 3x3 matrix will have the same effect on homogeneous coordinates for set of real numbers \mathbb{R}^2 that the shear matrix \mathbf{A} has?

$$\mathbf{A} = \begin{bmatrix} 1 & 0 \\ 1.5 & 1 \end{bmatrix}$$

2. Use matrix multiplication to find the image of the triangle with data matrix

$$\mathbf{D} = \begin{bmatrix} -2 & -1 & -3 \\ 0 & 3 & 5 \end{bmatrix}$$

under the transformation that reflects points through the y-axis. Sketch both the original triangle and its image.

