2-D LINEAR TRANSFORMATIONS

Given the following linear transformations:

- Scaling:

$$S = \begin{bmatrix} s_x & 0 \\ 0 & s_y \end{bmatrix} \tag{1}$$

- Rotation:

$$R = \begin{bmatrix} \cos\theta & -\sin\theta \\ \sin\theta & \cos\theta \end{bmatrix} \tag{2}$$

- Shear (x):

$$H = \begin{bmatrix} 1 & a \\ 0 & 1 \end{bmatrix} \tag{3}$$

Write a program that demonstrates the use of the above transformations on a shape point set (fish shape). The shape is represented by a set of 2-D points.

The point set is listed in the Matlab example code. You can copy the points and hardcode them in your own in your own program or create a file that you can read into your program.

In this assignment, you must code the transformation functions (do not use library functions for the transformations). You can use functions for matrix multiplication from linear algebra libraries.