1. Let

$$A = \begin{pmatrix} 1 & 1 \\ 0 & 1 \end{pmatrix}$$

and

$$B = \begin{pmatrix} 2 \\ -4 \end{pmatrix}$$

What, if it is possible to do the multiplication, is

   (a) $C = AB$

   (b) $D = BA$

   (c) $E = A^T B^T$

   (d) $F = B^T A^T$

2. Draw a unit square with coordinates in anti-clockwise order $(0,0), (1,0), (1,1)$ and $(0,1)$. *Transform* this square now by applying the matrix A above to it. That is, multiply each point by A. What is the shape you get?

3. Discussion of three programs to achieve same end, one written using GLUT, one using SDL, and one using Python

Outside tutorial exercises:

- The following example from the Khan Academy **draws a Bézier Curve** and also draws the supporting lines that generate the curve. Change the program so that

    1. the animation moves slower;

    2. the values (labels) of the 4 control points are printed to the right unless they are close to the right border; change this behaviour so that the text is printed immediately *under* the point and change the color that the label is printed in.

- The following web sites have a lot of useful information for graphics programming. Please visit each of the following sites and have a look around them. Become familiar with what they have to offer so that you can refer back to them throughout the semester. Please spend at least 45 mins in total looking at them.

    1. OpenGL

    2. OpenGL Blue Book

    3. OpenGL Red Book

    4. NeHE Tutorials