8. Matrices of Geometrical Transforms

1. Write an M-file, what gives the matrix of any affin transform with fixed point in Origin
   The name of the file: `affin1`

   - Input arguments: The images of points (0, 1) and (1, 0).
   - Output argument: The matrix of the transform.
   - If someone calls the fuction without input arguments give them an opportunity for the graphical input.

2. Write an M-file, what gives the matrix of any affin transform.
   The name of the m-file: `affin2`

   - Input arguments: a triangle (with the coordinates of the edges) and the image of the triangle (also with the edges)
   - Output argument: The matrix of the transform.
   - Give an opportunity for graphical input (as in the previous exercise)
   - Draw a figure in both cases.

   +1 Write an M-file to illustrate the exercise solved last year.
   The name of the file should be: `affin3` The task is not part of the mandatory programs to be submitted, so it does not increase the score that can be obtained, only the score that has been obtained.

   - Input parameters: The coordinates of the triangle's center of gravity and two points (lying on different sides).
   - Output arguments: The coordinates of the vertices.
   - Allow the input parameters to be specified graphically. (As before.)
   - We can use the functions we wrote for previous tasks.

The exercise: **Given 3 points in the plane, 2 of them, $P(2;3)$ and $Q(4;2)$, lie on two different sides of a regular triangle. The third, $S(3;3)$, is the center of gravity of the triangle. Give the coordinates of the vertices of the triangle.**