1. Affine transformations

Files: The accompanying file for this assignment is `assignment1.html`.
Delivery: upload the modified HTML file and any other necessary files to the Racó. All explanations and/or answers to the problems should be included in the HTML file.

Problem 1.

Implement the following 2-dimensional transformations and apply them to the polygonal object in `points`. Make your program interactive, allowing the user to choose the different parameters.

1. Translation.
2. Rotation around the origin.
3. Scaling by (λ_1, λ_2) with respect to the origin.
4. Reflection with respect to the x-axis.

Problem 2.

Implement compositions of 2-dimensional transformations and apply them to the polygonal object in `points`. Make your program interactive, allowing the user to choose the different parameters.

1. Composition of translation and rotation.
2. Composition of rotation and translation.
3. Reflection with respect to a given line.

Problem 3.

Implement the following projections (from 2D to 1D) and apply them to the polygonal object in `points`. Make your program interactive, allowing the user to choose the different parameters.

1. Parallel projection.
2. Central projection.

Problem 4.

Determine which of the projections implemented in Problem 3 preserve affine combinations. Illustrate that in your program. For example, by showing the same point in the original and projected space, and showing the corresponding coordinates. **Write your justified answer in the HTML file.**