1. Translate a triangle with vertices (10,20), (10,10), (20,10) by \( t_x = 5, t_y = 10 \) and then rotate it about the origin by 30 degrees. Compare the result with the one obtained by reversing the operations: (3.66,32.32), (8.66,23.66), and (17.32,28.66) by plotting the original triangle together with these 2 results.

2. Define the y-direction shear in matrix form, with a shearing parameter \( s_y \), relative to the y-axis.

3. In 3D, what are the steps to perform scaling with respect to a selected fixed position?
4. Scale a triangle with vertices at original coordinates \((10,25,5), (5,10,5), (20,10,10)\) by \(sx=1.5\), \(sy=2\), and \(sz=0.5\) with respect to the centre of the triangle. For verification, roughly plot the \(x\) and \(y\) values of the original and resultant triangles, and imagine the locations of \(z\) values.