**CMPUT 414: Winter 2016**

**Lab2, due date Jan 23, 2016, 23:59 PM**

1. **3D Transformations**

a) What is the homogenous transformation matrix for:

i) Translation of (2, -3, 2)

ii) Followed by Scaling with (2, 2, 2)

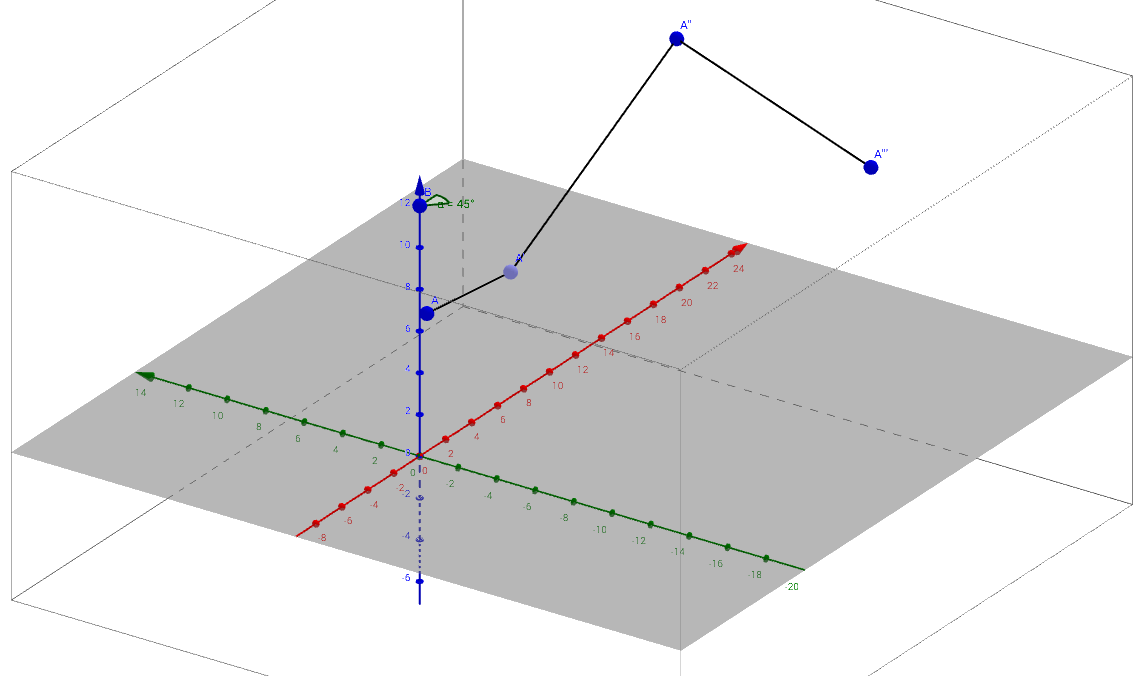
iii) Followed by Rotation of 45 degrees around Z-axis

b) Apply the above final transformation matrix to a 3D point at (5, 3, 4).

c) Illustrate the transformations applied in (b). You can either draw them manually, or build them by using a geometry software package (e.g. Geogebra http://app.geogebra.org/3d/), and copying its output. Make sure to illustrate rotation angles.

I did translation first, and then scaling, then rotation.

The answers are as follows (starting from (5, 3, 4)):



d) If after the same transformations as in (a), we get the resulting 3D point (6, 1, 4), what is the original 3D point?

So, the initial 3D point is (, , 0)

e) Rotate the vector from the origin to  by an angle 60around direction (-1, 1, 1).

Normalized direction:

Therefore, the final vector is ()