Question 2-1

(a) Projection Matrix is defined as

Which in our case is:

We are given , we need to change it to the Camera Frame of Coordinates. So that:

So that the camera pose matrix is given by:

And all together the Projection Matrix is:

(b)

By inserting the point in the global frame we find its location on the screen:

By normalizing by the third (last member) which has to be equal 1 we get the true representation on the screen:

(c) We are given that the actual point on the screen is (241.5, 169). Finding the re-projection error:

Third term is out of our interest anyway.