1. If we wish to build a system of equations, we need to consider that this is a projective transformation for a picture, meaning that we have coordinates.

Say that we would like to move the coordinates from a source image to a destination image (with coordinates), using projective transformation.

We can describe the problem as:

Where P is a projection matrix:

Note that for .

First, let us calculate :

Now, we calculate:

In the same manner:

As 1 point gives us 2 equations, we need 4 points to form 8 equations. We don't need 9 equations since we a freedom rank.

Thus, we can create the next system equation:

Since there is noise in the system, we can't find out how to zero out the equation system. What we can do is to bring it to the minimum.

As showed in class, the solution for this problem the eigenvector that correspond to the smallest eigenvalue!