```
%======
% Name:
                    hw4_2.m
                   Kairi Kozuma
% Author:
% O matrix
% Psi matrix
psi = [400,0,320;0,-400,240;0,0,1];
% Singular value decomposition
[UU SS VV] = svd(Q);
\mbox{\ensuremath{\$}} Extract Gcw by reshaping last column of VV
sz = size(VV);
vv = VV(:,sz(2));
Gcw = (reshape(vv, 4, 3))';
% Comput Rwc and Twc
Rwc = Gcw(1:3,1:3)';
Twc = - Rwc * Gcw(1:3,end);
% Print out values
fprintf('Rotation matrix Rwc:\n');
disp(Rwc);
fprintf('Translation vector Twc:\n');
disp(Twc);
% Calculate real projection from point in world
qfindW = [14.3423181854615;4.38556290697137;3.07246344912662;1];
rProb = psi * Gcw * qfindW;
rProb = rProb./rProb(3);
rProb = rProb(1:2);
fprintf('Point q projects to:\n');
disp(rProb);
fprintf('Which is closest to coordinate:\n');
rPts = [492,376,633,380;276,249,9,216];
dist = sqrt((rProb(1) - rPts(1,:)).^2 + (rProb(2) - rPts(2,:)).^2);
[m, i] = min(dist);
disp(rPts(1:2,i));
Rotation matrix Rwc:
  0.0171 0.0297 0.0833
-0.0776 0.0447 0.0001
-0.0415 -0.0722 0.0342
Translation vector Twc:
   0.0486
   0.0562
   0.0486
Point q projects to:
 633.6588
   9.6692
```

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Which is closest to coordinate: