```
% EE263: Worse time for control system failiure
% Problem data

% The A matrix
A = [0.5 0   0   0;
     0   0.5 0.5 0;
     0   0   1   0.5;
     0.5 0   0   1];
% The B matrix
B = [1 0 0 0;
     0 1 0 0]';
% the K matrix
K =[-5 0 -25 -20;
     0 -1  -1  -2];

 A_tilde = A+B*K; % when the system is working normally

 [U,S,D] = svd(A);
 [V,D_] = eig(A);

 [U_tilde,S_tilde,D_tilde] = svd(A_tilde);
 %[U_tilde,S_tilde,D_tilde] = svd(expm(A_tilde));
 [V_tilde, D__tilde] = eig(A_tilde);
```

Results

```
 v1 = D(:,1);
 x = expm(A_tilde*4.63)*expm(A*1)*expm(A_tilde*4.37)*v1
 norm(x)
```

```
x =

  -16.4579
  -24.4025
   -1.5220
    5.2748


ans =

   29.9413
```

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