Problem 3b

```
clear all


A = [2 -3 1 3;
    1 4 -3 -3;
    5 3 -1 -1;
    3 -6 -3 1];

xguess2 = [-1 + 1i 0 0 0 ]';
xguess1 = [0 -1 0 0 ]';
xguess4 = [0 1 0 1 ]';
xguess3 = [0 0 -1 1 + 1i ]';

[xg1, yg1 ] = riterq_im(A, xguess1, 100);
[xg2, yg2 ] = riterq_im(A, xguess2, 100);
[xg3, yg3 ] = riterq_im(A, xguess3, 100);
[xg4, yg4 ] = riterq_im(A, xguess4, 100);

eig_S1 = xg1(:,100);
eig_S2 = xg2(:,100);
eig_S3 = xg3(:,100);
eig_S4 = xg4(:,100);

echo on
diary vj_problem3b.txt
%intial xguess
xguess1
xguess2
xguess3
xguess4


%yguess history
yg1
yg2
yg3
yg4


%best guess xk final
eig_S1
eig_S2
eig_S3
eig_S4


echo off
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Warning: Matrix is close to singular or badly scaled. Results may be inaccurate.

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RCOND =  1.189296e-17.
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RCOND =  2.243959e-17.
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RCOND =  9.514365e-18.
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RCOND =  3.872066e-17.
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RCOND =  2.942155e-17.
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RCOND =  9.514365e-18.
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RCOND =  1.961437e-17.
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RCOND =  1.063738e-17.
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RCOND =  1.961437e-17.
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RCOND =  1.189296e-17.
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RCOND =  9.514365e-18.
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RCOND =  1.189296e-17.
Warning: Matrix is close to singular or badly scaled. Results may be
 inaccurate.
RCOND =  2.378591e-18.
diary vj_problem3b.txt
%intial xguess
xguess1

xguess1 =

     0
    -1
     0
     0

xguess2

xguess2 =

  -1.0000 - 1.0000i
   0.0000 + 0.0000i
   0.0000 + 0.0000i
   0.0000 + 0.0000i

xguess3

xguess3 =

   0.0000 + 0.0000i
   0.0000 + 0.0000i
  -1.0000 + 0.0000i
   1.0000 - 1.0000i

xguess4

xguess4 =

     0
     1
     0
     1



%yguess history
yg1

yg1 =

  Columns 1 through 7

    4.0000    4.1165    3.1734    0.7835    2.8328    1.6131   -0.5326

  Columns 8 through 14
```

```
  0.8183    2.7213    1.6026   -0.4342    0.9070    2.5612    1.6705

Columns 15 through 21

 -0.3718    1.0537    1.8628    1.5056   -0.4391    0.7365    2.7516

Columns 22 through 28

  1.4640   -0.3990    0.6822    2.7227    1.3565   -0.1242    0.6344

Columns 29 through 35

  2.6768    1.2531    0.4174    0.7881    2.7474    1.5523   -0.4507

Columns 36 through 42

  0.8129    2.7313    1.5884   -0.4403    0.8805    2.6291    1.6579

Columns 43 through 49

 -0.3854    1.0259    2.0373    1.5733   -0.4464    0.8515    2.6844

Columns 50 through 56

  1.6340   -0.4086    0.9739    2.3121    1.6513   -0.3923    1.0113

Columns 57 through 63

  2.1214    1.6015   -0.4331    0.9064    2.5631    1.6703   -0.3720

Columns 64 through 70

  1.0533    1.8654    1.5067   -0.4397    0.7381    2.7520    1.4670

Columns 71 through 77

 -0.4030    0.6856    2.7253    1.3637   -0.1512    0.6321    2.6743

Columns 78 through 84

  1.2480    0.4507    0.8020    2.7396    1.5731   -0.4465    0.8511

Columns 85 through 91

  2.6850    1.6336   -0.4090    0.9730    2.3162    1.6521   -0.3914

Columns 92 through 98

  1.0130    2.1114    1.5983   -0.4350    0.9001    2.5807    1.6681

Columns 99 through 101

 -0.3744    1.0486    1.8966
```

```
yg2

yg2 =

  Columns 1 through 7

    2.0000    1.6719   -0.3524    1.4243   -0.1162    0.6739    2.7117

  Columns 8 through 14

    1.3620   -0.1335    0.6349    2.6775    1.2553    0.4040    0.7826

  Columns 15 through 21

    2.7496    1.5437   -0.4508    0.7979    2.7423    1.5671   -0.4482

  Columns 22 through 28

    0.8398    2.7017    1.6216   -0.4190    0.9478    2.4233    1.6685

  Columns 29 through 35

   -0.3740    1.0493    1.8920    1.5177   -0.4452    0.7549    2.7542

  Columns 36 through 42

    1.4974   -0.4336    0.7246    2.7478    1.4416   -0.3637    0.6597

  Columns 43 through 49

    2.7031    1.3089    0.0914    0.6755    2.7172    1.3425   -0.0670

  Columns 50 through 56

    0.6417    2.6848    1.2693    0.3152    0.7478    2.7537    1.4848

  Columns 57 through 63

   -0.4230    0.7074    2.7397    1.4081   -0.2905    0.6372    2.6799

  Columns 64 through 70

    1.2593    0.3772    0.7718    2.7527    1.5262   -0.4481    0.7684

  Columns 71 through 77

    2.7533    1.5205   -0.4463    0.7592    2.7541    1.5049   -0.4387

  Columns 78 through 84

    0.7354    2.7513    1.4621   -0.3965    0.6801    2.7210    1.3522

  Columns 85 through 91
```

```
   -0.1071    0.6362    2.6789    1.2572    0.3909    0.7773    2.7513

  Columns 92 through 98

    1.5352   -0.4500    0.7832    2.7494    1.5447   -0.4509    0.7995

  Columns 99 through 101

    2.7413    1.5695   -0.4476

yg3

yg3 =

  Columns 1 through 4

   1.6667 + 0.6667i  -1.0211 + 1.4972i  -0.2174 + 0.6925i   1.4638 +
 1.4140i

  Columns 5 through 8

   1.0460 + 2.0709i   1.1469 + 2.0057i   1.1516 + 2.0075i   1.1516 +
 2.0075i

  Columns 9 through 12

   1.1516 + 2.0075i   1.1516 + 2.0075i   1.1516 + 2.0075i   1.1516 +
 2.0075i

  Columns 13 through 16

   1.1516 + 2.0075i   1.1516 + 2.0075i   1.1516 + 2.0075i   1.1516 +
 2.0075i

  Columns 17 through 20

   1.1516 + 2.0075i   1.1516 + 2.0075i   1.1516 + 2.0075i   1.1516 +
 2.0075i

  Columns 21 through 24

   1.1516 + 2.0075i   1.1516 + 2.0075i   1.1516 + 2.0075i   1.1516 +
 2.0075i

  Columns 25 through 28

   1.1516 + 2.0075i   1.1516 + 2.0075i   1.1516 + 2.0075i   1.1516 +
 2.0075i

  Columns 29 through 32

   1.1516 + 2.0075i   1.1516 + 2.0075i   1.1516 + 2.0075i   1.1516 +
 2.0075i
```

```
 Columns 33 through 36

  1.1516 + 2.0075i   1.1516 + 2.0075i   1.1516 + 2.0075i   1.1516 +
2.0075i

 Columns 37 through 40

  1.1516 + 2.0075i   1.1516 + 2.0075i   1.1516 + 2.0075i   1.1516 +
2.0075i

 Columns 41 through 44

  1.1516 + 2.0075i   1.1516 + 2.0075i   1.1516 + 2.0075i   1.1516 +
2.0075i

 Columns 45 through 48

  1.1516 + 2.0075i   1.1516 + 2.0075i   1.1516 + 2.0075i   1.1516 +
2.0075i

 Columns 49 through 52

  1.1516 + 2.0075i   1.1516 + 2.0075i   1.1516 + 2.0075i   1.1516 +
2.0075i

 Columns 53 through 56

  1.1516 + 2.0075i   1.1516 + 2.0075i   1.1516 + 2.0075i   1.1516 +
2.0075i

 Columns 57 through 60

  1.1516 + 2.0075i   1.1516 + 2.0075i   1.1516 + 2.0075i   1.1516 +
2.0075i

 Columns 61 through 64

  1.1516 + 2.0075i   1.1516 + 2.0075i   1.1516 + 2.0075i   1.1516 +
2.0075i

 Columns 65 through 68

  1.1516 + 2.0075i   1.1516 + 2.0075i   1.1516 + 2.0075i   1.1516 +
2.0075i

 Columns 69 through 72

  1.1516 + 2.0075i   1.1516 + 2.0075i   1.1516 + 2.0075i   1.1516 +
2.0075i

 Columns 73 through 76
```

```
   1.1516 + 2.0075i   1.1516 + 2.0075i   1.1516 + 2.0075i   1.1516 +
2.0075i

  Columns 77 through 80

   1.1516 + 2.0075i   1.1516 + 2.0075i   1.1516 + 2.0075i   1.1516 +
2.0075i

  Columns 81 through 84

   1.1516 + 2.0075i   1.1516 + 2.0075i   1.1516 + 2.0075i   1.1516 +
2.0075i

  Columns 85 through 88

   1.1516 + 2.0075i   1.1516 + 2.0075i   1.1516 + 2.0075i   1.1516 +
2.0075i

  Columns 89 through 92

   1.1516 + 2.0075i   1.1516 + 2.0075i   1.1516 + 2.0075i   1.1516 +
2.0075i

  Columns 93 through 96

   1.1516 + 2.0075i   1.1516 + 2.0075i   1.1516 + 2.0075i   1.1516 +
2.0075i

  Columns 97 through 100

   1.1516 + 2.0075i   1.1516 + 2.0075i   1.1516 + 2.0075i   1.1516 +
2.0075i

  Column 101

   1.1516 + 2.0075i

yg4

yg4 =

  Columns 1 through 7

   -2.0000   -0.5994    0.3499    0.4078    0.4694    2.1801    0.4434

  Columns 8 through 14

    2.4333    0.8548    2.6940    1.6372   -0.4060    0.9816    2.2770

  Columns 15 through 21

    1.6440   -0.3994    0.9954    2.2065    1.6264   -0.4151    0.9578

  Columns 22 through 28
```

```
    2.3829    1.6635   -0.3795    1.0382    1.9624    1.5457   -0.4509

  Columns 29 through 35

    0.8012    2.7401    1.5720   -0.4469    0.8490    2.6883    1.6315

  Columns 36 through 42

   -0.4109    0.9685    2.3365    1.6559   -0.3875    1.0215    2.0631

  Columns 43 through 49

    1.5823   -0.4431    0.8686    2.6539    1.6493   -0.3942    1.0070

  Columns 50 through 56

    2.1449    1.6087   -0.4284    0.9212    2.5184    1.6729   -0.3690

  Columns 57 through 63

    1.0592    1.8266    1.4902   -0.4279    0.7146    2.7435    1.4223

  Columns 64 through 70

   -0.3246    0.6450    2.6883    1.2767    0.2705    0.7315    2.7502

  Columns 71 through 77

    1.4548   -0.3858    0.6723    2.7146    1.3359   -0.0381    0.6465

  Columns 78 through 84

    2.6899    1.2799    0.2514    0.7248    2.7479    1.4421   -0.3646

  Columns 85 through 91

    0.6602    2.7035    1.3098    0.0865    0.6742    2.7162    1.3398

  Columns 92 through 98

   -0.0553    0.6435    2.6868    1.2734    0.2902    0.7386    2.7521

  Columns 99 through 101

    1.4680   -0.4043    0.6867


%best guess xk final
eig_S1

eig_S1 =
```

```
    0.1831
   -0.1795
    0.7076
   -0.6584

eig_S2

eig_S2 =

  -0.1938 - 0.1938i
   0.0663 + 0.0663i
  -0.5430 - 0.5430i
   0.4040 + 0.4040i

eig_S3

eig_S3 =

   0.3033 - 0.0360i
   0.1214 + 0.2383i
   0.4741 - 0.4775i
  -0.0983 + 0.6105i

eig_S4

eig_S4 =

   -0.3216
   -0.5061
    0.1264
   -0.7902



echo off
```

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