Contents

CS375 HW11

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```
clc ;clear all; close all;
format long g
```

Problem 1.C

```
e= sqrt(eps)/4;
A=[1 e; e 1];

charPolynomial=charpoly(A) %characteristic polynomial

eigenvalues=roots(charPolynomial) %lambda 1 and lambda 2
```

```
charPolynomial =

     1    -2     1


eigenvalues =

     1
     1
```

Problem 1.E

See attachments

Problem 1.F

```
e= sqrt(eps)/4;
A=[1 e; e 1];
x=[3;4];
tol1=1e-8;
tol2=1e-9;
tol3=1e-10;

[eval1,evec1]=power_method(A,x,tol1);
[eval2,evec2]=power_method(A,x,tol2);

% to run code just eliminate percentage sign:
```

```
%[eval3,evec3]=power_method(A,x,tol3);

eval1
evec1

eval2
evec2
```

```
eval1 =

          1.00000000279397


evec1 =

         0.750000001629815
                         1


eval2 =

           1.0000000031863


evec2 =

         0.855315474301313
                         1
```

Problem 2.A and 2.B

see attachments

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