

1b) I inputted the following, which can be found in the HW6_script.m file, into the power method function found in power_method.m:

```
A1=[2 1 1; 1 2 1; 1 1 2];

x0=[1; -1; 2];

tol=0.0001;

maxiter=150;

[lambda,v,iter] = power_method(A1,x0,tol,maxiter)
```

And got the following output:

```
| (c) \lambda_1 = 3.999908 V^{M} = [6.999994, 0.999983, 1]^T

X = \frac{1}{3.999908} \cdot [2, 1, 1]^T = [0.890011, 0.250006, 0.250006]^T

V^{(1)}X^T = [0.999994, 0.999983, 1]^T \cdot [0.500011, 0.250006]

= [0.500608] \cdot (0.250006) \cdot (0.250006)

= [0.500602] \cdot (0.250006) \cdot (0.250006)

= [0.500602] \cdot (0.250006) \cdot (0.250006)

= [0.500601] \cdot (0.250006) \cdot (0.250006)

= [0.999999] \cdot (0.000016) \cdot (0.999999)

= [0.999999] \cdot (0.000016) \cdot (0.999999)

= [0.999999] \cdot (0.000016) \cdot (0.999999)

= [0.999999] \cdot (0.000016) \cdot (0.9999999)

= [0.999999] \cdot (0.000016) \cdot (0.9999999)

= [0.999999] \cdot (0.000016) \cdot (0.9999999)

= [0.999999] \cdot (0.999999) \cdot (0.9999999) \cdot (0.99999999)

= [0.999999] \cdot (0.999999) \cdot (0.9999999) \cdot (0.99999999) \cdot (0.9999999) \cdot (0.99999999) \cdot (0.99999999) \cdot (0.9999999) \cdot (0.99999999) \cdot (0.9999999) \cdot (0.9999999) \cdot (0.99999999) \cdot (0.99999999) \cdot (0.99999999) \cdot (0.9999999) \cdot (0.9999999) \cdot (0.99999999) \cdot (0.9999999) \cdot (0.999999) \cdot (0.
```

I inputted the following, which can be found in the HW6_script.m file, into the power method function found in power method.m:

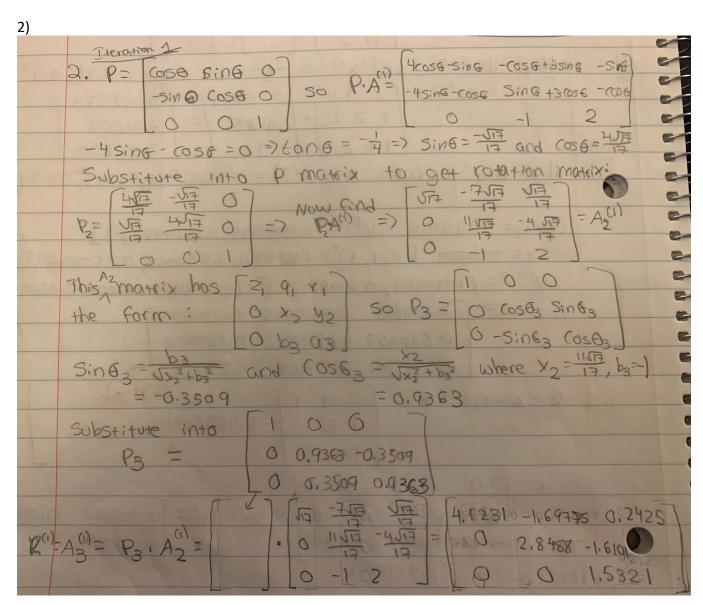
```
A2=[1.00002 0.000016; -0.000001 0.9999999];
x0=[1; 1]; %choose nonzero initial vector
tol=0.0001;
maxiter=150;
[lambda,v,iter] = power_method(A2,x0,tol,maxiter)

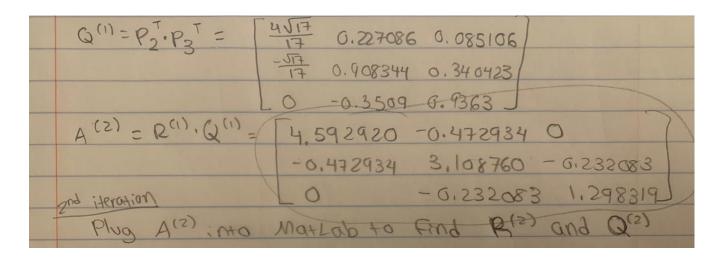
And got the following output:
>> HW6_script

lambda =
    1.0000360000000000
v =
    1.0000000000000000
0.999962001367951

iter =
    1
```

```
\lambda_{2} = 1.600036 \text{ and } (B^{1} - 3 \pm) w^{(2)'} = G, w^{(2)}' = [3.999962]^{T}
w^{(2)'} = [0, 1, 0.999962]^{T}
V^{(2)} = (\lambda_{2} - \lambda_{1}) w^{(2)} + \lambda_{1} (x^{+}w^{(2)}) v^{(1)}
= (1.600036 - 3.999908) ([0, 1, 0.999962]^{T})^{T}
+ 3.999908 [[0.500011, 0.250006, 0.250006] \cdot [0, 1, 0.999962]^{T})
\cdot [0.999994, 0.9999983, 1)^{T} = [-2.999908, 2.999908, 0]^{T})
```





I inputted the following, which can be found in the HW6_script.m file, into the power method function found in power_method.m:

```
A3=[4.592920 -0.472934 0; -0.472934 3.108760 -0.232083; 0 -0.232083 1.298319]; [Q,R]=qr(A3)
```

And got the following output: