In [1]:

```
import numpy as np
import scipy.linalg as sla
import matplotlib.pyplot as plt
%matplotlib inline
```

In [18]:

```
n = 15
x = np.linspace(0,1,n+2)
x = x[1:-1]
```

In [24]:

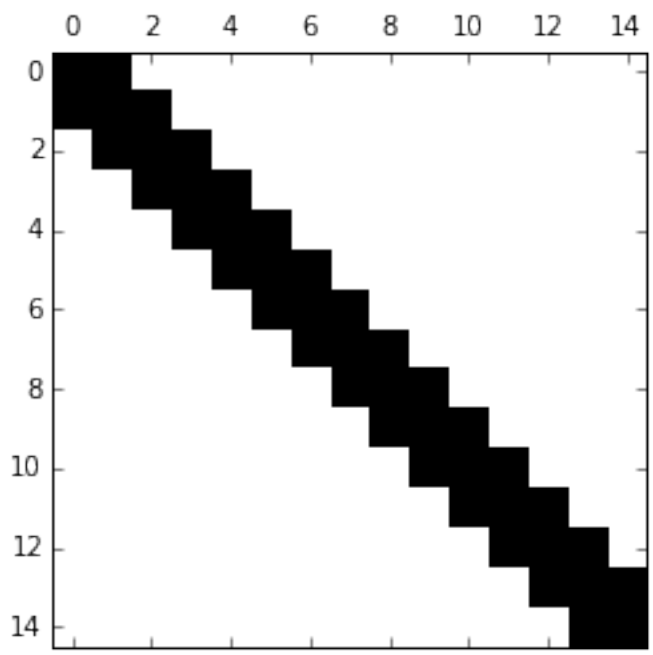
```
v=np.ones((n,))
A = np.diag(2*v) + np.diag(-1*v[1:],1) + np.diag(-1*v[1:],-1)
A[0,0] = 1
A[-1,-1] = 1
```

In [25]:

```
plt.spy(A)
```

Out[25]:

```
<matplotlib.image.AxesImage at 0x105f82940>
```



In [26]:

```
values, vectors = sla.eig(A)
```

In [27]:

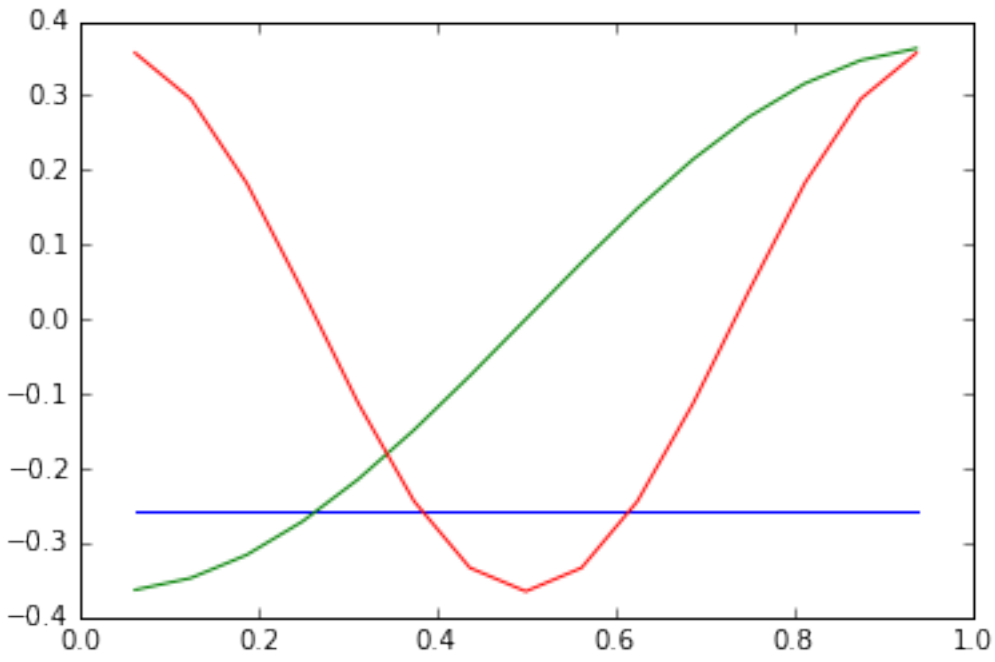
```
I = np.argsort(values)
```

In [30]:

```
plt.plot(x, vectors[:,I[0]])
plt.plot(x, vectors[:,I[1]])
plt.plot(x, vectors[:,I[2]])
```

Out[30]:

```
[<matplotlib.lines.Line2D at 0x10614ecc0>]
```



In [ ]: