

Program:

```
import numpy as np
import matplotlib.pyplot as plt
from scipy.signal import freqz

a=[1,2,-2,-1]
b=[1,0,0,0]
zeros=np.roots(a)
poles=np.roots(b)
plt.figure(figsize=(10,5))
plt.subplot(1,2,1)
plt.scatter(np.real(zeros),np.imag(zeros),color='red',marker='o',label='Zeros')
plt.axvline(0,color='black',linewidth=0.5)
plt.axhline(0,color='black',linewidth=0.5)
plt.title('Pole-Zero Diagram')
plt.xlabel('Real')
plt.ylabel('Imaginary')
plt.grid(True)
theta=np.linspace(0,2*np.pi,100)
plt.plot(np.cos(theta),np.sin(theta),linestyle='--',color='black',linewidth=1)
plt.legend()
w,h=freqz(a,b)

plt.subplot(1,2,2)
plt.plot(w/np.pi,np.abs(h))
plt.title('Phase Response')
plt.xlabel('Normalized Frequency (*pi rad/sample)')
plt.ylabel('Phase')
plt.grid(True)
plt.tight_layout()
plt.show()
```

Output:

