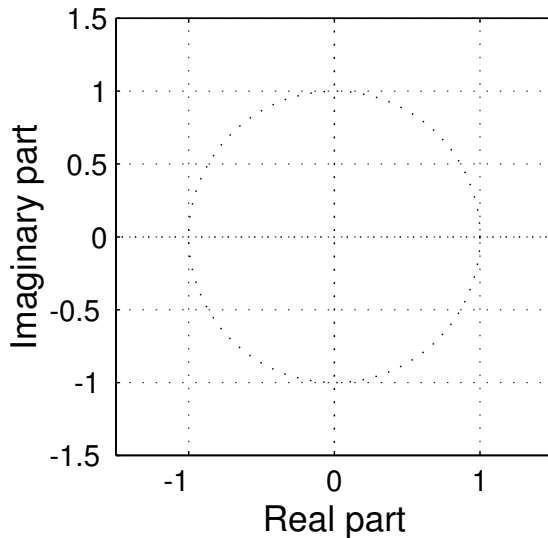


**PROBLEM:**

A discrete-time system is defined by the following system function:

$$H(z) = \frac{10 + 10z^{-1}}{1 + 0.81z^{-2}}$$

- (a) Write down the difference equation that is satisfied by the input  $x[n]$  and output  $y[n]$  of the system.
- (b) Determine *all* the poles and zeros of  $H(z)$  and plot them in the  $z$ -plane.



- (c) Fill in numbers for the vectors `bb` and `aa` in the following MATLAB computation of the frequency response of the system:

```
bb=[           ];    aa=[           ];
```

```
omegahat=-pi:pi/200:pi;  
H=freqz(bb,aa,omegahat);
```