

PROBLEM:

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

$$H(z) = \frac{0.64 + z^{-2}}{1 - 0.64z^{-2}}.$$

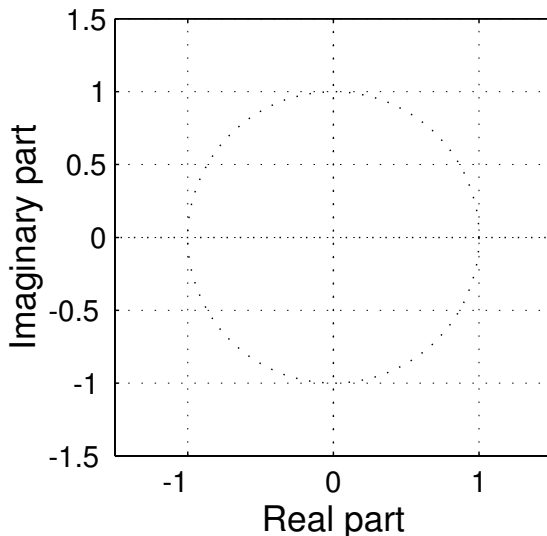
- (a) Write down the difference equation that is satisfied by the input $x[n]$ and output $y[n]$ of the system.
- (b) Fill in numbers for the vectors `bb` and `aa` in the following MATLAB computation of the frequency response of the system:

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

```
yy=filter(bb,aa,xx)
```

where `xx` is the input signal to be filtered.

- (c) Determine *all* the poles and zeros of $H(z)$ and plot them in the z -plane.



- (d) Compute $|H(e^{j\hat{\omega}})|^2 = H(e^{j\hat{\omega}})H^*(e^{j\hat{\omega}})$, the magnitude-squared of the frequency response. *Your answer should only contain real quantities.*