

## PROBLEM:

A second-order filter has poles at  $z = \frac{1}{2} \pm j\frac{1}{2}\sqrt{3}$  and two zeros at  $z = \pm 1$ .

- (a) Write the time-domain description of this system—in the form of a difference equation.
- (b) Determine the response of the system to an input that is an impulse. Give the answer as a formula and as a plot.