

## PROBLEM:

Answer the following questions about the system whose  $z$ -transform system function is

$$H(z) = \frac{1 + 0.8z^{-1}}{1 - 0.9z^{-1}}$$

- Determine the poles and zeros of  $H(z)$ .
- Determine the difference equation relating the input and output of this filter
- Derive a simple expression (purely real) for the mag-squared of the frequency response  $|H(\hat{\omega})|^2$ .
- Is this filter a Lowpass or Highpass filter? EXPLAIN your answer.