z-Transform Practice Problems

1. Consider the following LCCDE:

$$y[n] - 2y[n-2] = x[n] - 2x[n-1] + x[n-2]$$

- (a) What is the transfer function H(z) for this system?
- (b) What are the poles and zeros?
- (c) Is this system causal?
- (d) Is it stable?
- 2. Consider an LTI system with transfer function:

$$H(z) = \frac{z+1}{z^2 - 0.25}.$$

- (a) What is an LCCDE for this system?
- (b) What are the poles and zeros?
- (c) Is this system stable?