

# ECE 466 Quiz 4

March 3, 2022

1. Determine if the following is a proper rational function:

$$\frac{z^{-1} - 0.5z^{-2}}{1 - 2z^{-1} + z^{-2}}$$

- (a) Proper
  - (b) Improper
2. Which one of the following correspond to a causal and stable system?
- (a) Poles:  $p_1 = 0.5, p_2 = 2$ , ROC:  $|z| > 2$ .
  - (b) Poles:  $p_1 = 0.5 + 0.5j, p_2 = 0.5 - 0.5j, p_3 = p_4 = \frac{1}{\sqrt{2}}$  ROC:  $|z| > \frac{1}{\sqrt{2}}$ .
  - (c) Poles:  $p_1 = 0.2, p_2 = 1.2$ , ROC:  $0.2 < |z| < 1.2$ .
  - (d) Poles:  $p_1 = p_2 = 0.3, p_3 = 0.7$ , ROC:  $|z| < 0.3$ .