

2.68 Consider the causal LTI system described by the difference equation

$$y[n] = p_0 x[n] + p_1 x[n-1] - d_1 y[n-1],$$

where $x[n]$ and $y[n]$ denote, respectively, its input and output. Determine the difference equation representation of its inverse system.

2.75 Is the cascade connection of two stable LTI systems also stable? Justify your answer.

2.90 (a) Evaluate the autocorrelation sequence of each of the sequences of Problem 2.5.

(b) Evaluate the cross-correlation sequence $r_{xy}[\ell]$ between the sequences $x[n]$ and $y[n]$, and the cross-correlation sequence $r_{xw}[\ell]$ between the sequences $x[n]$ and $w[n]$ of Problem 2.5.