

EXERCISE 5.10: Show that the time-flip system y[n] = x[-n] is a linear system.

lellan Schafer and Voder Signal Processing First ISBN 0-13-065562-7



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Define
$$FLIP\{x[n]\} = x[-n]$$

Scaling: $FLIP\{\alpha x[n]\} = \alpha x[-n]$
That is, "doubling x[n]" will double its flipped version
Additive:
 $FLIP\{x_1[n]+x_2[n]\} = x_1[-n]+x_2[-n]$
 $= FLIP\{x_1[n]\}+FLIP\{x_2[n]\}$