

Example 9-1: Shifting the Unit Step

McClellan, Schafer and Yoder, Signal Processing First, ISBN 0-13-065562-7. Prentice Hall, Upper Saddle River, NJ 07458. © 2003 Pearson Education, Inc.

In order to get a different starting time, we can define a shifted unit step, e.g., x(t) = u(t-7). Expanding the definition

of the unit step, we have
$$\begin{cases} 1 & (t-7) > 0 \end{cases}$$

so a plot of x(t) is zero for t < 7, and it makes its transition from zero to one at t = 7.

 $x(t) = u(t - 7) = \begin{cases} 1 & (t - 7) \ge 0 \\ 0 & (t - 7) < 0 \end{cases}$