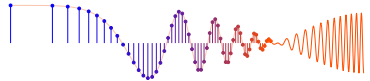
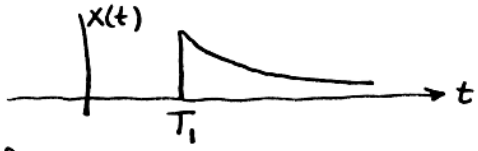


EXERCISE 9.6: Show by drawing pictures like Fig. 9-14(a) that if $x(t) = 0$ for $t < T_1$ and $h(t) = 0$ for $t < T_2$, then the output $y(t) = x(t) * h(t)$ is zero for $t < T_1 + T_2$. In other words, the starting time of $y(t)$ is the sum of the starting times of $x(t)$ and $h(t)$.

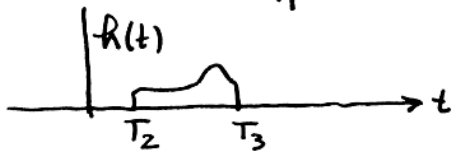
McClellan, Schafer and Yoder, *Signal Processing First,* ISBN 0-13-065562-7.
Prentice Hall, Upper Saddle River, NJ 07458.

SOLUTION

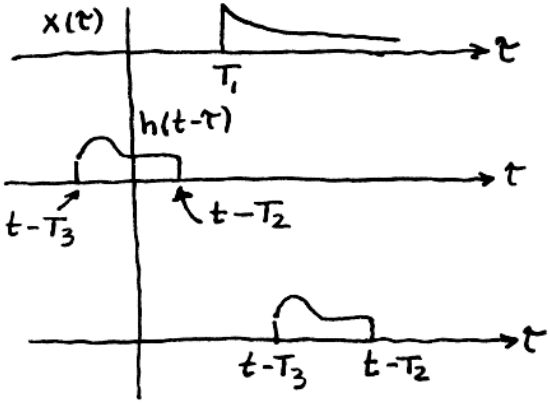
Assume $x(t)$ is



Assume $h(t)$ is finite-duration



Draw "flip and slide" diagrams:



NO overlap when

$t - T_2 < T_1$

$\Rightarrow t < T_1 + T_2$

Thus $y(t) = 0$ for $t < T_1 + T_2$