4.1. Consider the system shown in Figure P4.4-1. Let the input to this system be the unit impulse response shown in Figure P4.4-2. The discrete-time signal whose Fourier transform is shown in Figure P4.4-1 is 0 when $x[n] = 0$. The discrete-time Fourier transforms of $x(t)$ and $x[n]$ are related by $X(\omega)$.

**Figure P4.4-1**

4.2. Let $x(t)$ be a real-valued continuous-time signal. Figure P4.4-1 shows the system response $x[n]$.

4.3. Draw a block diagram of the system shown in Figure P4.4-1.

4.4. The system shown in Figure P4.4-1 approximately introduces the delay $\frac{T}{2}$.