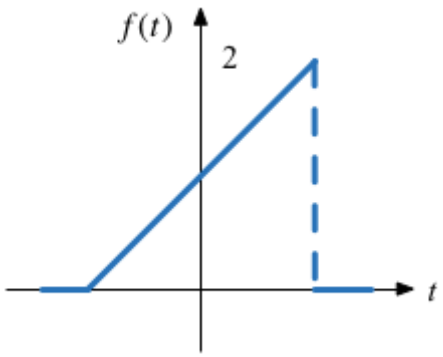
Answers Example 1

Consider a signal

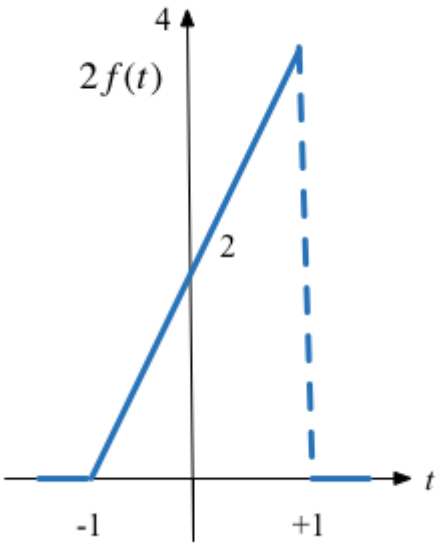
$$x = f(t) = \begin{cases} 0 \ : \ t < -1 \\ t + 1 \ : \ -1 \leq t \leq 1 \\ 0 \ : \ t > 1 \end{cases}$$

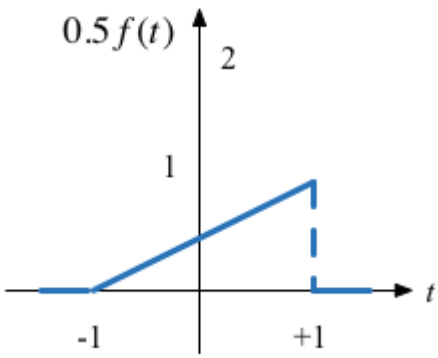
Sketch this signal



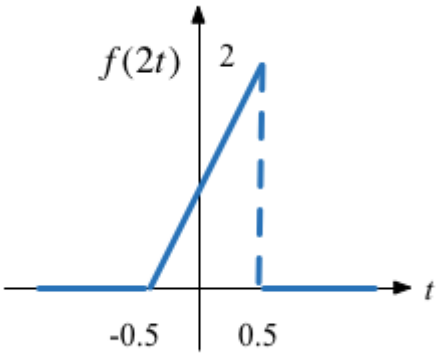
plot the effect on this signal of applying the following basic signal operations

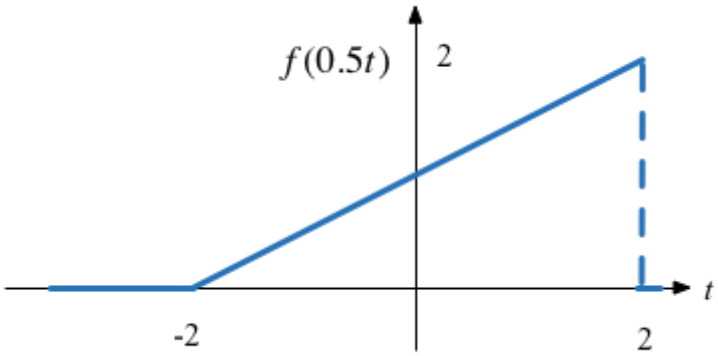
Amplitude scaling



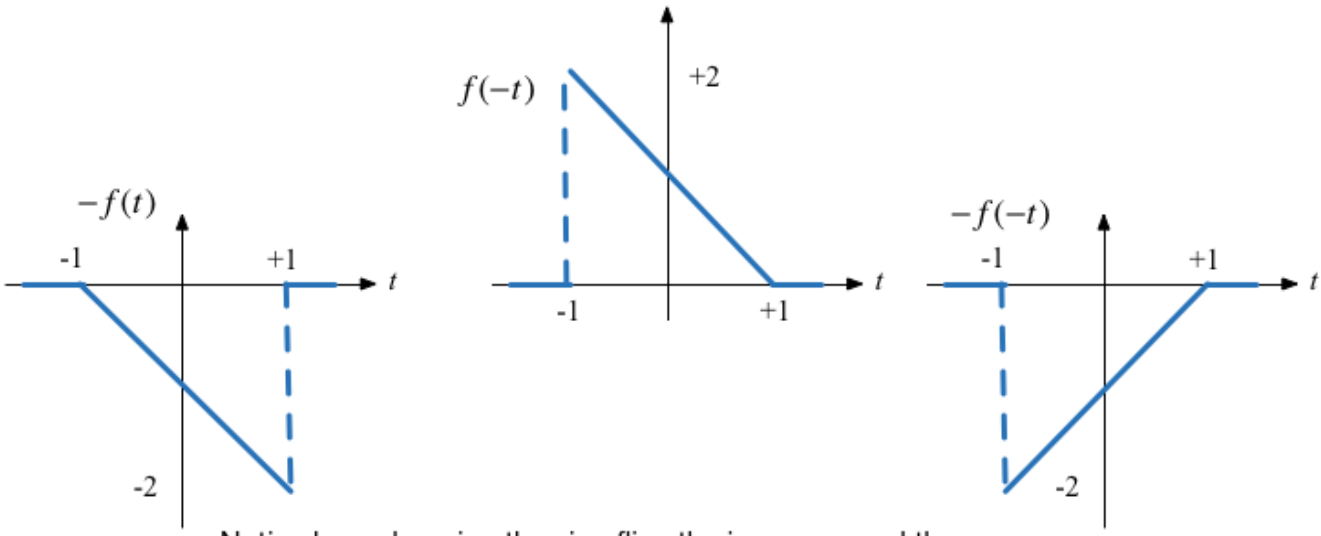


Time scaling



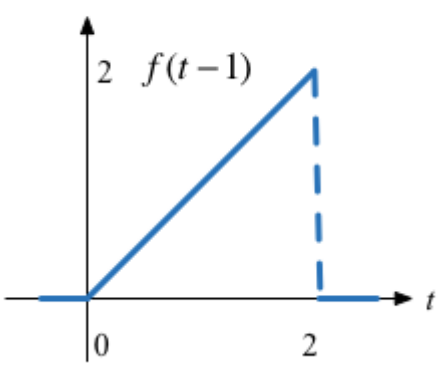


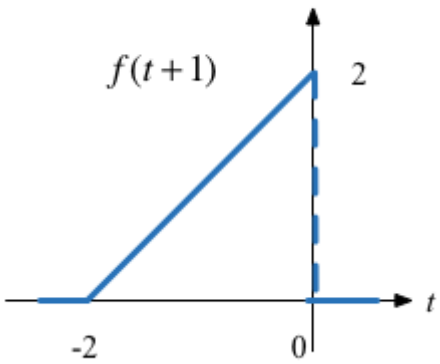
Mirroring



Notice how changing the sign flips the image around the axes

Time shifting - delay and advance





Exercise

We leave the solution of $-2f(-t+2)$ as an exercise for the reader but note that it involves *amplitude scaling*, *amplitude mirroring*, *time mirroring*, and a *time shift*. Each operation can be performed in sequence in any order.