Worksheet 1

Review of the concluding example from the first hour.

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

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

Amplitude scaling

$$2f(t)$$

$$0.5f(t)$$

Time scaling

$$f(2t)$$

$f(0.5t)$

Mirroring

$-f(t)$

$f(-t)$

$-f(-t)$

Time shifting - delay and advance

$f(t-1)$

$f(t+1)$

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.