**Combinations of the above operations:** In the future we will frequently encounter signals obtained by combining several of the operations introduced above, for example,

\[ y(t) = 3 \times x(-2(t-1)) \, . \]

To figure out what signal this is, it is useful to introduce some intermediate signals. For example, in the above, we might start by plotting \( x(t) \) and \( u(t) = 3 \times x(2t) \), as shown next.

![Graphs of x(t) and u(t) with t from 1 to 4 on the x-axis and y-values ranging from 0 to 3]

which is an amplitude scaling and time scaling of \( x(t) \). Next, one might plot \( v(t) = u(t-1) = 3 \times x(2(t-1)) \), which is a time shifting of \( u(t) \) by one time unit. Finally, we plot \( y(t) = v(-t) = 3 \times x(-2(t-1)) \). **This is a mistake:** replacing \( t \) by \(-t\) in \( v(t) \) actually gives \( v(-t) = 3 \times x(2((-t)-1)) = 3 \times x(-2t-2) \), which is not the desired signal \( y(t) = 3 \times x(-2(t-1)) \).

![Graphs of v(t) and v(-t) with t from -3 to 3 on the x-axis and y-values ranging from 0 to 3]

Note that you can also find \( y(t) \) by applying the scaling, time shifting and time reversal in some other order, or by applying several at a time. But until you are very experienced, it is advisable to apply only one or two at a time.

**Corrected Version:** Let us start by plotting \( x(t) \) and \( u(t) = 3 \times x(2t) \), as shown next.

![Graphs of x(t) and u(t) with t from 1 to 4 on the x-axis and y-values ranging from 0 to 3]

Next let's plot \( v(t) = u(-t) = 3 \times x(2(-t)) = 3 \times x(-2t) \).

![Graph of v(t) with t from -3 to -1 on the x-axis and y-values ranging from 0 to 3]

Finally, we plot \( v(t-1) = 3 \times x(-2(t-1)) = y(t) \)

![Graph of y(t) with t from -3 to 1 on the x-axis and y-values ranging from 0 to 3]