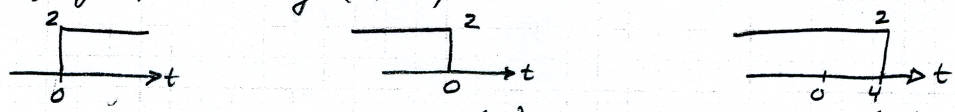
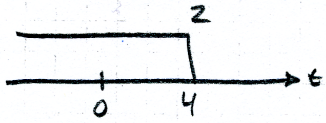
① text, 2-33 d, n, p

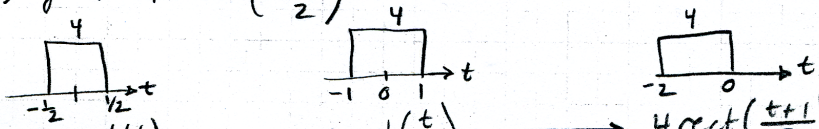
d) $g(t) = 1 + \mathrm{sgn}(4-t)$



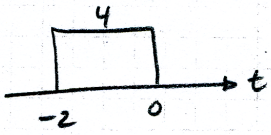
$1+\mathrm{sgn}(t) \xrightarrow[\text{time reverse}]{t \to -t} 1+\mathrm{sgn}(-t) \xrightarrow[\text{shift right 4}]{t \to t-4} 1+\mathrm{sgn}(-(t-4)) = 1+\mathrm{sgn}(4-t)$



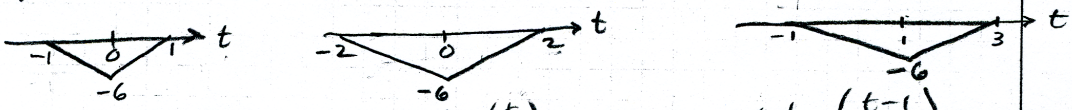
n) $g(t) = 4\,\mathrm{rect}\left(\frac{t+1}{2}\right)$



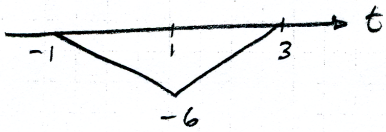
$4\,\mathrm{rect}(t) \xrightarrow[t \to \frac{t}{2}]{} 4\,\mathrm{rect}\left(\frac{t}{2}\right) \xrightarrow[t \to t+1]{} 4\,\mathrm{rect}\left(\frac{t+1}{2}\right)$



p) $g(t) = -6\,\mathrm{tri}\left(\frac{t-1}{2}\right)$



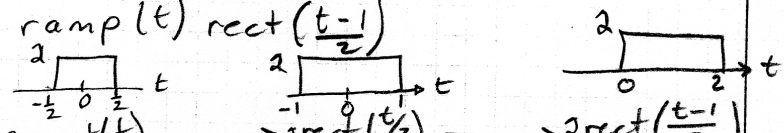
$-6\,\mathrm{tri}(t) \xrightarrow[t \to t/2]{} -6\,\mathrm{tri}\left(\frac{t}{2}\right) \xrightarrow[t \to t-1]{} -6\,\mathrm{tri}\left(\frac{t-1}{2}\right)$



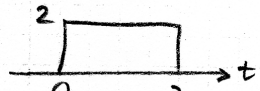
② text, 2-34 t, u

t) $g(t) = 2\,\text{ramp}(t)\,\text{rect}\left(\frac{t-1}{2}\right)$

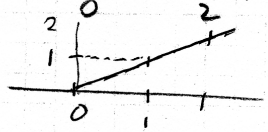
$2\,\text{rect}\left(\frac{t-1}{2}\right)$: $2\,\text{rect}(t) \xrightarrow[t \to t/2]{} 2\,\text{rect}(t/2) \xrightarrow[t \to t-1]{} 2\,\text{rect}\left(\frac{t-1}{2}\right)$



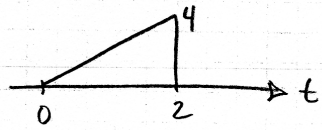
$2\,\text{rect}\left(\frac{t-1}{2}\right)$



$\text{ramp}(t)$

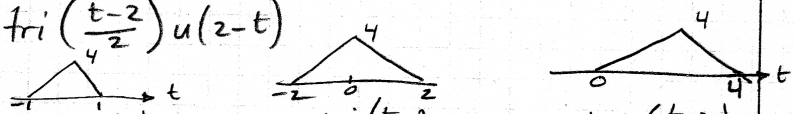


$2\,\text{ramp}(t)\,\text{rect}\left(\frac{t-1}{2}\right)$

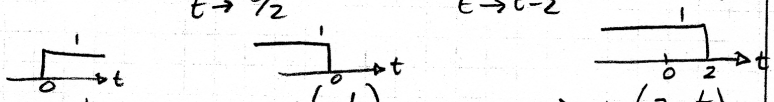


4) $g(t) = 4\,\text{tri}\left(\frac{t-2}{2}\right)u(2-t)$

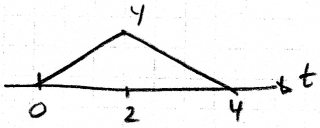
$4\,\text{tri}\left(\frac{t-2}{2}\right)$: $4\,\text{tri}(t) \xrightarrow[t \to t/2]{} 4\,\text{tri}(t/2) \xrightarrow[t \to t-2]{} 4\,\text{tri}\left(\frac{t-2}{2}\right)$



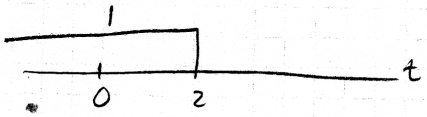
$u(2-t)$: $u(t) \xrightarrow[t \to -t]{} u(-t) \xrightarrow[t \to (t-2)]{} u(2-t)$



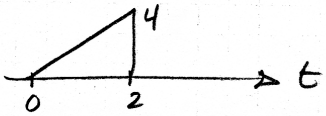
$4\,\text{tri}\left(\frac{t-2}{2}\right)$:



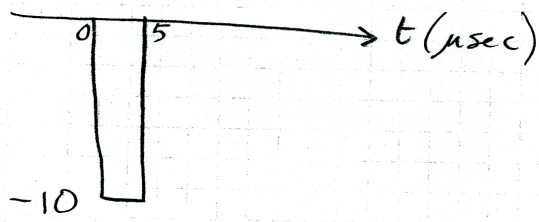
$u(2-t)$:



$4\,\text{tri}\left(\frac{t-2}{2}\right)u(2-t)$:



(3) Text, 2-39



This is a unit rectangle subject to (in order)

- amplitude scale of −10
- time shift right by 0.5 sec
- time compression by a factor of $\frac{1}{5e^{-6}} = 200{,}000$

$$\boxed{x(t) = -10\,\mathrm{rect}(200{,}000\,t - 0.5)}$$

note: this is also a unit rectangle subject to the following operations (in order)

- amplitude scale by −10
- time compression by a factor of $\frac{1}{5e-6}$
- time shift by 2.5e-6

$$\boxed{x(t) = -10\,\mathrm{rect}\left(\frac{t - 2.5e-6}{5e-6}\right)}$$

TOPS 35510 - 100 sheets
35520 - 200 sheets