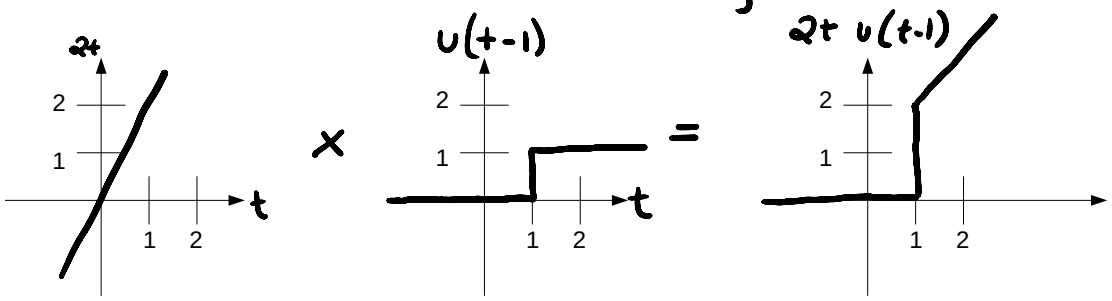
1. Plot $2\,t\,u(t-1)$

Plot of 2t and u(t-1), then multiply




2. Find the Laplace Transform of $f(t) = u(t-3)$ by the integral definition.

$$F(s) = \int_{0^-}^{\infty} f(t)\,e^{-st}\,dt$$

$$= \int_{0^-}^{\infty} u(t-3)\,e^{-st}\,dt$$

$$= \int_{3}^{\infty} e^{-st}\,dt$$

$$= -\frac{1}{s}e^{-st}\Big]_{t=3}^{\infty}$$

$$= -\frac{1}{s}\left[e^{-s\infty} - e^{-3s}\right]$$

$$= \boxed{\frac{1}{s}e^{-3s}}$$