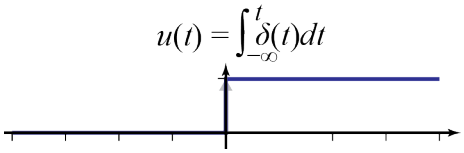
TOOL: The impulse function is the derivative of a unit step-function, and a unit step-function is the integral of the impulse function.

$$\delta(t) = \frac{du(t)}{dt} \quad \text{and} \quad u(t) = \int_{-\infty}^{t} \delta(t)dt$$

where

$$u(t) = \begin{cases} 0 & t < 0 \\ 1 & t \geq 0 \end{cases}$$

Graphical view:



NOTE: In some cases the value of $u(t)$ at $t = 0$ is defined to be 1/2 instead of 1. For Laplace transforms, it is convenient to define the value at $t = 0$ to be unity.