

Concept Question 1-6: How are the ramp and rectangle functions related to the step function?

Let $u(t)$ be the step function, $r(t)$ be the unit ramp function and $\text{rect}(t)$ be the unit rectangle function of width 1, centered at $t = 0$.

Then:

$$r(t) = tu(t),$$

$$u(t) = dr/dt,$$

$$\text{rect}(t) = u(t + 1/2) - u(t - 1/2).$$

See Figs. 1-14 and 1-16(a).