

Special signals:

- Sinc: $\text{sinc}(t) = \frac{\sin 2\pi t}{2\pi t}$
- Delta function: $\delta(t) = \begin{cases} \infty & t = 0 \\ 0 & \text{otherwise} \end{cases} \quad \int_{-\infty}^{\infty} f(t)\delta(t)dt = f(0)$
- Unit step (CT): $u(t) = \begin{cases} 1 & t \geq 0 \\ 0 & \text{otherwise} \end{cases}$
- Unit sample: $\delta[n] = \begin{cases} 1 & n = 0 \\ 0 & \text{otherwise} \end{cases}$
- Unit step (DT): $u[n] = \begin{cases} 1 & n \geq 0 \\ 0 & \text{otherwise} \end{cases}$

Note: $\delta[t] = d/dt u[t]$ and $d[n] = u[n] - u[n-1]$
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Special signals:
Complex exponentials

$$\exp(i\omega t) = \cos \omega t + i \sin \omega t$$

