

# Applied Signal Processing and Computer Science

WS 11/12

## Tutorial 2: Delta and Step Functions

1.1. Plot the following signals:

- $x(t) = T\delta(t + 2)$
- $x(t) = \delta(t + 3) - 2\delta(t - 2) - \delta(t - 1)$
- $x(t) = T\gamma(t - 2)$

1.2. Demonstrate the following equation  $\int_{-\infty}^{\infty} u(t)\delta(t - t_0)dt = u(t_0)$ .

1.3. Evaluate the following terms:

- $\int_{-\infty}^{\infty} e^t \delta(t - 2)dt$
- $\int_{-\infty}^{\infty} e^{-t} \cos(2t) \delta(t - \frac{\pi}{4})dt$