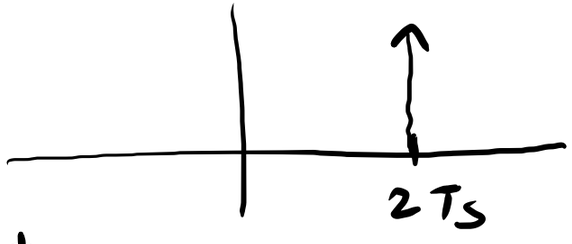
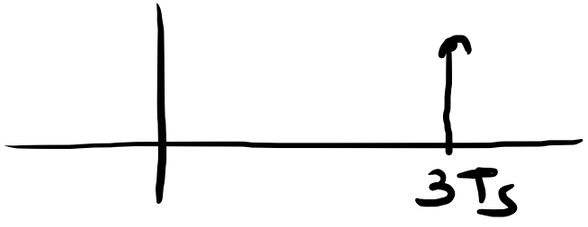
Lec - 6 - DC

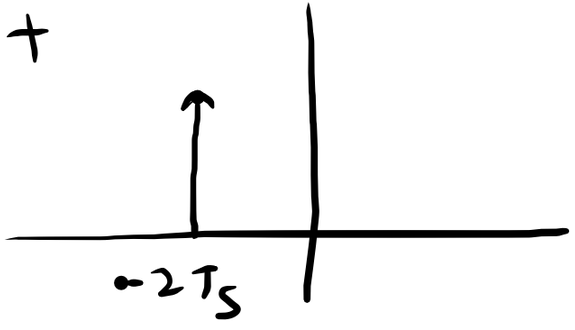
$\delta(t - nT_s)$ for $n = 2$



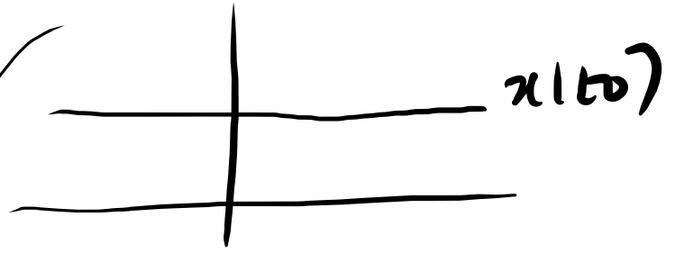
$n = 3$



$n = -2$



$x(t)\delta(t - t_0) = x(t_0)$



$\delta(t - t_0) = 0, \quad t \neq t_0$

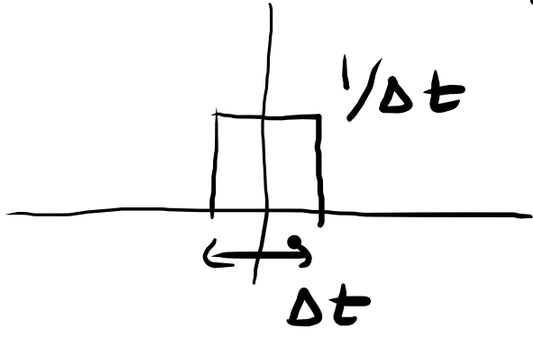
$x(t_0)\,\delta(t - t_0)$

$\delta(t) =$

$\delta(t) = 0, \quad t \neq 0$

$$\int_{-\infty}^{\infty} \delta(t)\,dt = 1$$

$\Delta t \to 0$



$x(t) * \delta(t - t_0) = x(t - t_0)$

$$G(f) * \sum_m \delta(f - mf_s) = \sum_m G(f) * \delta(f - mf_s) = x(t_0)$$

$$g_\delta(t) = \sum_{n=-\infty}^{\infty} g(nT_s)\,\delta(t - nT_s)$$

$$g_\delta(2T_s) \overset{?}{=} g(2T_s)$$

$$g_\delta(2T_s) = \sum_{n=-\infty}^{\infty} g(nT_s)\,\delta(2T_s - nT_s)$$

$$g(2T_s)\,\delta(\underbrace{2T_s - 2T_s}_{0})$$

$$\cdots\cdots g(-T_s)\,\delta(2T_s + T_s) + g(0)\,\delta(2T_s - 0) + g(T_s)\,\delta(2T_s - T_s) + \cdots$$

$$= \cdots \underbrace{g(-T_s)}_{0}\,\delta(3T_s) + \underbrace{g(0)}_{0}\,\delta(2T_s) + \underbrace{g(T_s)}_{0}\,\delta(T_s) + \cdots$$

$$g(2T_s)\delta(0)$$