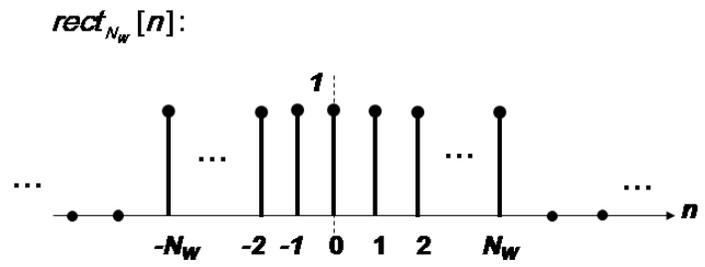


## Some Basic Discrete-time (DT) Functions

Function	Mathematical Definition	Sketch
<b>Unit Sequence</b>	$u[n] = \begin{cases} 1, & n \geq 0 \\ 0, & n < 0 \end{cases}$	
<b>Unit Ramp</b>	$ramp[n] = \begin{cases} n, & n \geq 0 \\ 0, & n < 0 \end{cases}$	
<b>Unit Impulse</b>	$\delta[n] = \begin{cases} 1, & n = 0 \\ 0, & n \neq 0 \end{cases}$	
<b>Periodic Impulse, or Impulse Train</b>	$\delta_N[n] = \sum_{m=-\infty}^{\infty} \delta[n - mN]$	

---

**Rectangle**  $rect_{N_W}[n] = \begin{cases} 1, & |n| \leq N_W \\ 0, & |n| > N_W \end{cases}$



---

**Signum**  $sgn[n] = \begin{cases} -1, & n < 0 \\ 0, & n = 0 \\ 1, & n > 0 \end{cases}$

