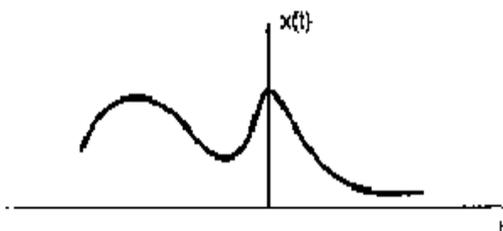
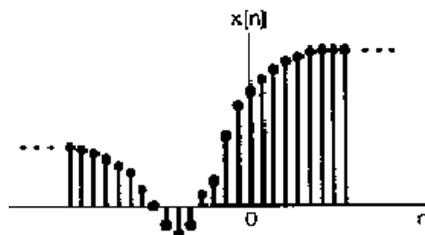


Travaux dirigés (Généralités sur les signaux)

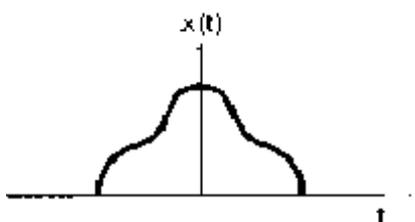
**Exercice 1 :** Soient les signaux suivants. Interpréter les expressions en bas de chaque signal.



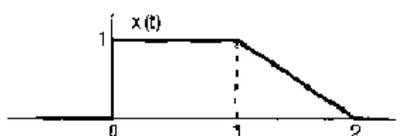
$x(t - t_0), (t_0 < 0)$



$x(-n)$  autour de  $n=0$



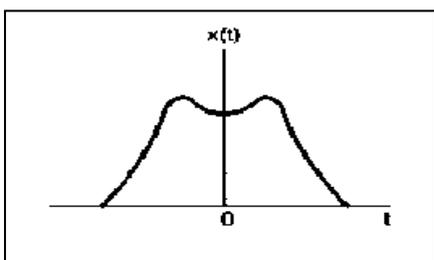
$x(2t), x(t/2)$



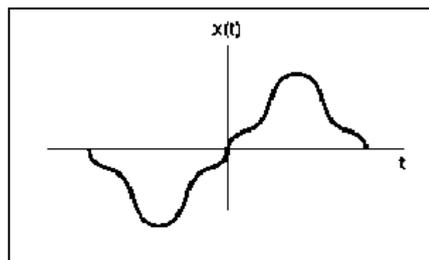
$x(t + 1), x(-t + 1), x((1.5)t), x(1.5t + 1)$

Rappel du cours :

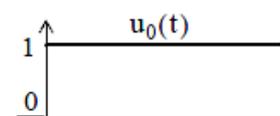
**Signal Paire :**  $x(-t) = x(t)$  et  $x(-n) = x(n)$



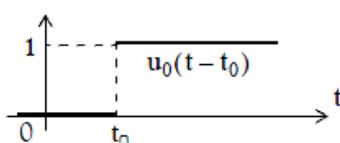
**Signal impaire :**  $x(-t) = -x(t)$  et  $x(-n) = -x(n)$



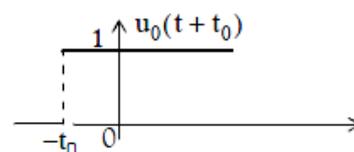
Echelon unitaire :



$$U_0(t) = \begin{cases} 0, & t < 0 \\ 1, & t > 0 \end{cases}$$



$$U_0(t - t_0) = \begin{cases} 0, & t < t_0 \\ 1, & t > t_0 \end{cases}$$



$$U_0(t + t_0) = \begin{cases} 0, & t < -t_0 \\ 1, & t > -t_0 \end{cases}$$

**Exercice 2 :** Illustrez les signaux représentés par les fonctions suivantes :

$$x(n) = \begin{cases} 0, & n < 0 \\ 1, & n \geq 0 \end{cases}$$

$$x(n) = \begin{cases} 1/2, & n < 0 \\ 0, & n = 0 \\ 1/2, & n > 0 \end{cases}$$

$$x(n) = \begin{cases} -1/2, & n < 0 \\ 0, & n = 0 \\ 1/2, & n > 0 \end{cases}$$

$$-A \cdot U_0(t)$$

$$-A \cdot U_0(t - T)$$

$$-A \cdot U_0(t + T)$$

$$A \cdot U_0(-t)$$

$$A \cdot U_0(-t + T)$$

$$-A \cdot U_0(-t - T)$$

$$-A \cdot U_0(-t)$$

$$-A \cdot U_0(-t + T)$$

(A étant une constante positive)

**Exercice 3 :** Déterminer l'expression des signaux suivants :

