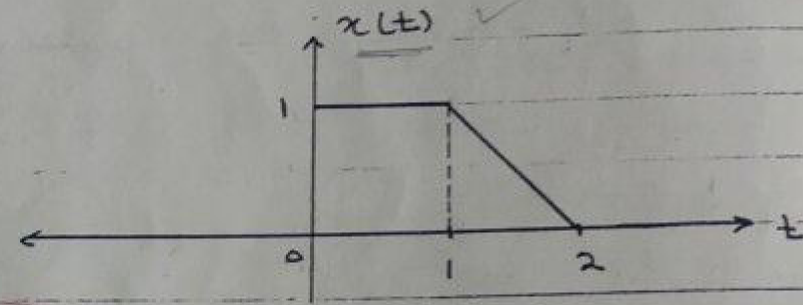
(iv) $x\left(\frac{3}{2}t+1\right)$

Solution:

Given that.



(i) $x(t+1)$.

(a) At $t=0$ $\quad x(t) = 1$.

$\Rightarrow$ At $t+1=0$ $\quad x(t+1) = 1$.

$\Rightarrow$ $\boxed{t = -1}$

(b) At $t = 1$ $\quad x(t) = 1$

$\Rightarrow$ At $t+1 = 1$ $\quad x(t+1) = 1$.

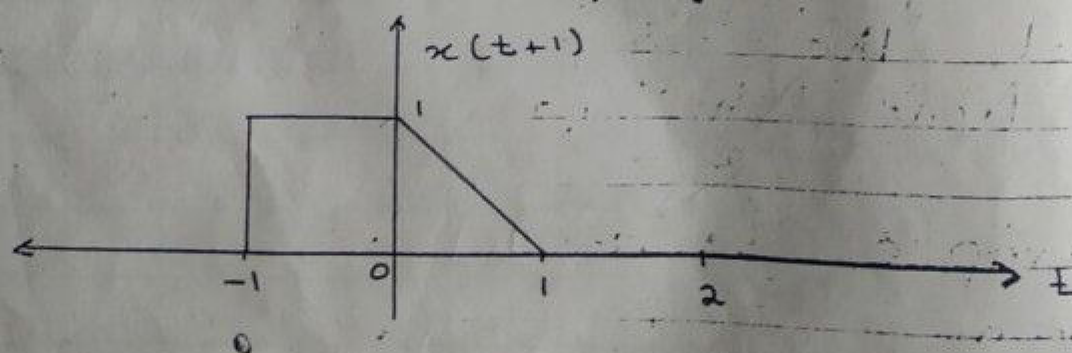
$\Rightarrow$ $\boxed{t = 0}$

(c) At $t = 2$ $\quad x(t) = 0$

$\Rightarrow$ At $t+1 = 2$ $\quad x(t+1) = 0$

$\Rightarrow$ $\boxed{t = 1.}$

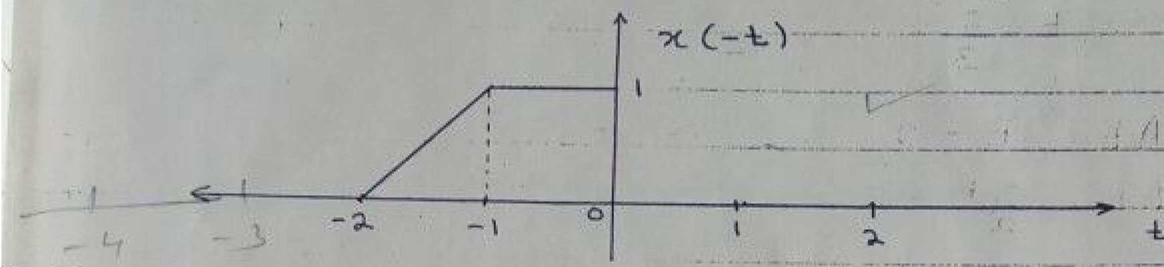
Hence the sketch of $x(t+1)$ will be:



(ii) $x(-t+1)$

As there is a $-$ve sign with the independent variable, hence we must first reflect it & then perform time

First sketching $x(-t)$ by reflecting $x(t)$ around $t=0$



Note:

$x(-t+1) = x(-(t-1))$

Hence $x(-t+1)$ is reflected & time delayed version of $x(t)$, (by 1 time unit)

Now, Alternately:

(a) At $t=0$ $x(-t) = 1$

$\Rightarrow$ At $-t+1=0$ $x(-t+1) = 1$

$\Rightarrow$ $\boxed{t = 1}$

(b) At $t=+1$ $x(-t) = 1$

$\Rightarrow$ At $-t+1 = +1$ $x(-t+1) = 1$

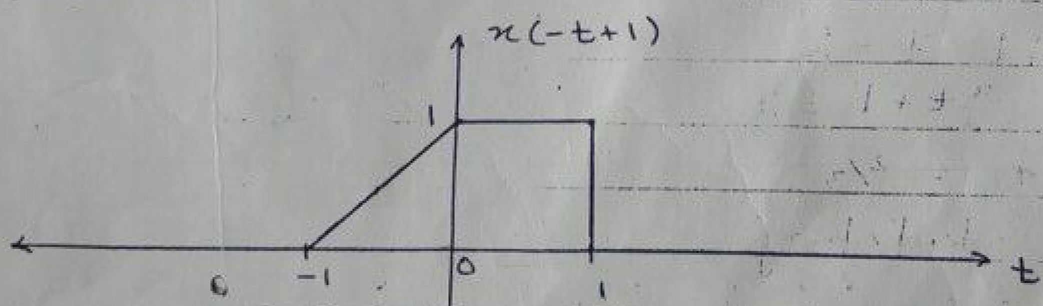
$\Rightarrow$ $\boxed{t = 0}$

(c) At $t = 2$ $x(t) = 0$

$\Rightarrow$ At $-t+1 = 2$ $x(-t+1) = 0$

$\Rightarrow$ $\boxed{t = -1}$

Hence sketching according to above calculation.



i) $x(\frac{3}{2}t)$

Now:

At $t=0$ $x(t) = 1$

At $\frac{3}{2}t = 0$ $x(\frac{3}{2}t) = 1$

$\Rightarrow$ $t = 0$

(b) At $t = 1$ $x(t) = 1$

$\Rightarrow$ At $\frac{3}{2}t = 1$ $x(\frac{3}{2}t) = 1$

$\Rightarrow t = \frac{2}{3}$

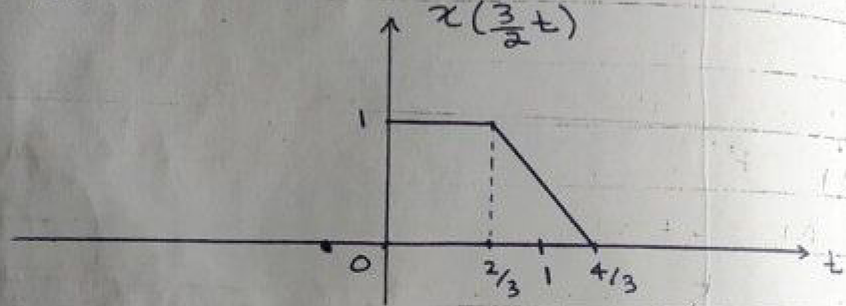
(c) At $t = 2$ $x(t) = 0$

$\Rightarrow$ At $\frac{3}{2}t = 2$ $x(\frac{3}{2}t) = 0$

$\Rightarrow$

$t = 4/3$

Hence, sketching according to above calculations:



(iv) $x(\frac{3}{2}t + 1)$

(a) At $t = 0$ $x(t) = 1$

At $\frac{3}{2}t + 1 = 0$ $x(\frac{3}{2}t + 1) = 1$

$\Rightarrow t = -2/3$

(b) At $t = 1$ $x(t) = 1$

At $\frac{3}{2}t + 1 = 1$ $x(3/2 t + 1) = 1$

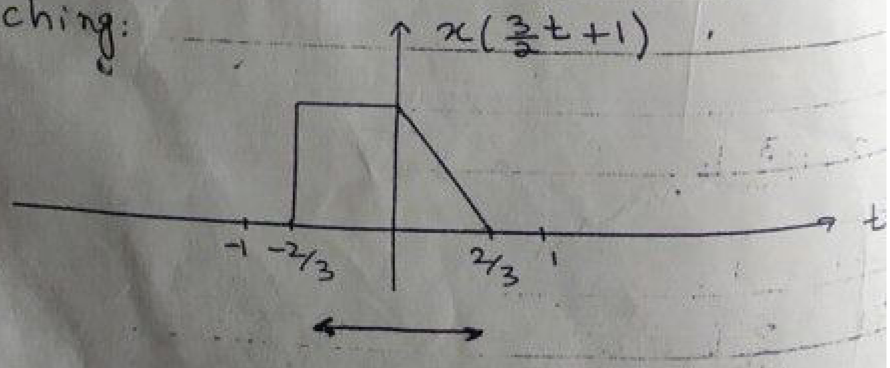
$\Rightarrow t = 0$

(c) At $t = 2$ $x(t) = 0$

At $\frac{3}{2}t + 1 = 2$ $x(\frac{3}{2}t + 1) = 0$

$\Rightarrow t = 2/3$

$\therefore$ Sketching:

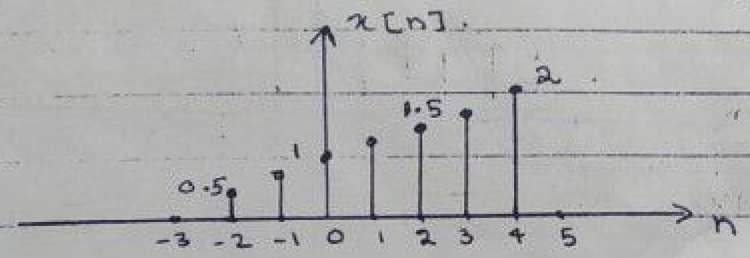


"Basic Problems"

1.4) Let $x[n]$ be a signal with $x[n] = 0$ for $n < -2$ & $n > 4$. For each signal given below, determine the values of "n" for which it is guaranteed to be zero.

Solution:

According to the conditions given, let the signal $x[n]$ be given as:



a) $x[n-3]$

This signal can be drawn as.

At, $n = -2$; $x[n] = 0.5$

At, $n-3 = -2$; $x[n-3] = 0.5$ (must)

$\Rightarrow$ $n = +1$

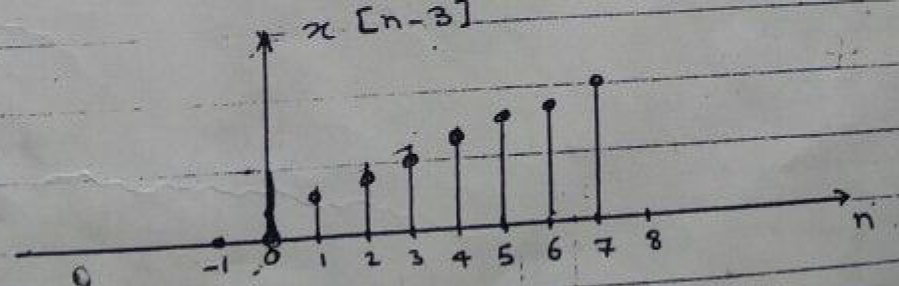
Similarly:

At, $n = 4$; $x[n] = 2$.

At, $n-3 = 4$; $x[n-3] = 2$.

$\Rightarrow$ $n = 7$.

$\therefore$



Hence, the value of n is zero for $\boxed{n < 1 \quad \& \quad n > 7}$