

PROBLEM:

For a particular linear time-invariant system, when the input is

$$x_1[n] = u[n] = \begin{cases} 0 & n < 0 \\ 1 & n \geq 0 \end{cases}$$

the corresponding output is

$$y_1[n] = nu[n] = \begin{cases} 0 & n < 0 \\ n & n \geq 0 \end{cases}$$

Determine the numerical value of the output at time $n = 10$ (i.e., compute $y_2[10]$) when the input is $x_2[n] = 2u[n - 2] - 2u[n - 6]$.