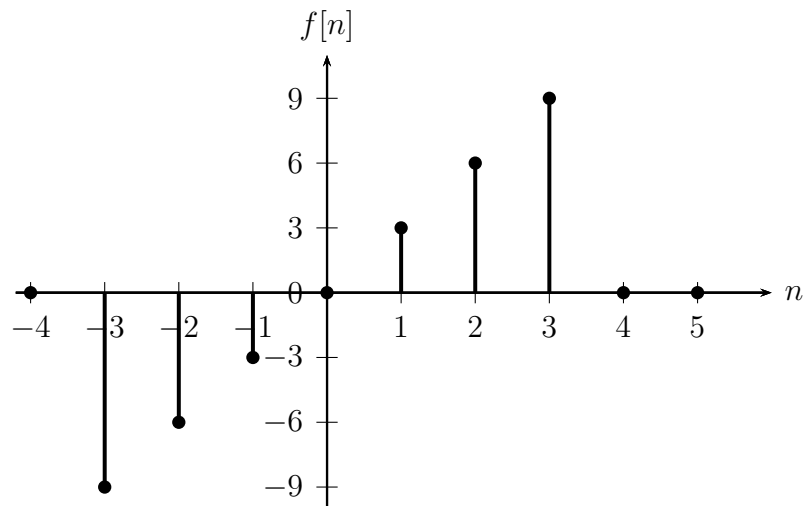


Instruction: Hand in your work with name and code in the mail box labeled INC211 by 4 pm. of the due date. DO NOT copy homework from your classmates or lend it to others. Anyone who violates this regulation will be given -10 for the homework.

1. Find the energy of a signals depicted in Figure below: (3 points)



2. Find the power of a signal $\cos\left[\frac{\pi}{3}n + \frac{\pi}{6}\right]$. (2 points)
3. Sketch the signals
 - (a) $n[u[n] - u[n - 7]]$ (2 points)
 - (b) $(n - 2)[u[n - 2] - u[n - 6]] + (-n + 8)[u[n - 6] - u[n - 9]]$ (3 points)
4. The difference equation

$$y[n + 2] - 4y[n + 1] + 4y[n] = u[n + 1] - 5u[n], \quad (1)$$

if the input $u[n] = (3n + 5)\mathbb{1}[n]$ and the initial condition $y[0] = y[1] = -40$.

- 4.1 Find the forced response $y_\phi[k]$ for $t \geq 0$. (5 points)
- 4.2 Find the natural response $y_n[n]$ and the total response $y[n]$ of the system. (5 points)
5. Find the total response of the system below

$$y[n] + 2y[n-1] + y[n-2] = 2u[n] - u[n-1]$$

with $u[n] = (3)^{-n}\mathbb{1}[n]$, $y[-1] = 2$, and $y[-2] = 3$. (5 points)