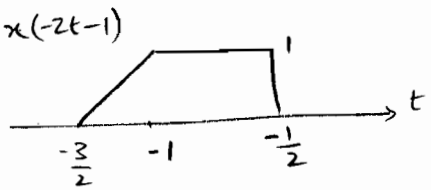
Midterm # 1 - 281

I (a) i) Periodic, Period $T = 2\pi$

ii) $P_{av} = \underline{1}$

iii) $x_{even}(t) = \cos t \qquad x_{odd}(t) = \sin(2t)$

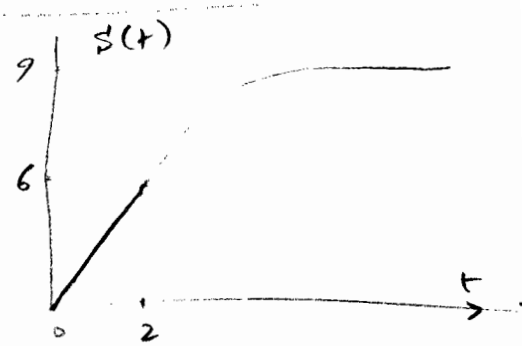
(b) i)



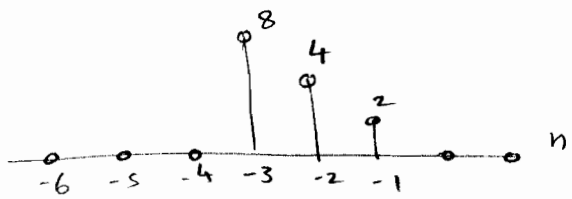
ii) $E = \frac{4}{3}$

$P_{av} = 0$

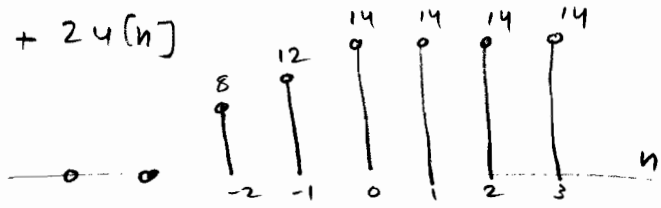
II (a) $s(t) = \begin{cases} 3t & 0 \le t < 2 \\ 9 - 3e^{2-t} & t \ge 2 \\ 0 & t < 0 \end{cases}$



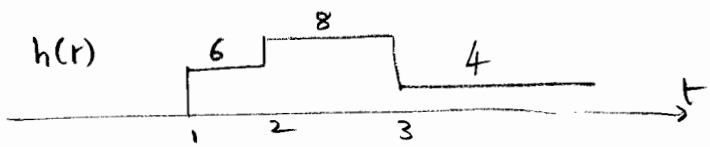
(b) i) $h[n] = 2^{-n}\left(u[n+3] - u[n]\right)$



ii) $y[n] = 8u[n+2] + 4u[n+1] + 2u[n]$

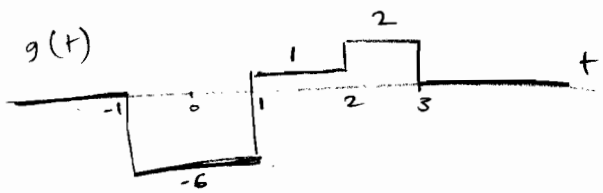


III (a) unstable (why?)
Causal



i) see figure

ii) Stable, non-Causal (why?)



(b. Last page) i) TV, Stable (why?)

ii) TI, Unstable (why?)