

## Sketch of answers to midterm

1. a) periodic,  $T = \frac{2\pi}{5}$

b) non periodic

c) periodic,  $N = 816$

2. not memoryless, stable, causal, nonlinear, time invariant

3a)  $y[n] = 2h[n-2]$

b)  $y[n] = \begin{cases} 0, & n \leq -2 \\ -3, & n = -1 \\ -4.5, & n = 0 \\ -5.5, & 1 \leq n \leq 8 \\ -2.5, & n = 9 \\ -1, & n = 10 \\ 0, & n \geq 11 \end{cases}$

4 a)  $n = 3$

b)  $n = 27$

5.  $x(t) = \frac{2A}{\pi t} \sin(Bt) \cos(\omega_c t)$   
 $= \frac{2AB}{\pi} \operatorname{sinc}\left(\frac{Bt}{\pi}\right) \cos(\omega_c t)$