

Q #1 - QUESTION 1

Note Title

9/13/2008

$$X(n) = \text{Im} \left\{ e^{j \frac{2\pi n}{4}} \right\} = \sin \frac{2\pi n}{4} = \sin \frac{\pi n}{2}$$

$$X(1) = \sin \frac{\pi}{2} = 1$$

$$X(5) = \sin \frac{5\pi}{2} = \sin \frac{\pi}{2} = X(1)$$

$$X(2) = \sin \frac{2\pi}{2} = 0$$

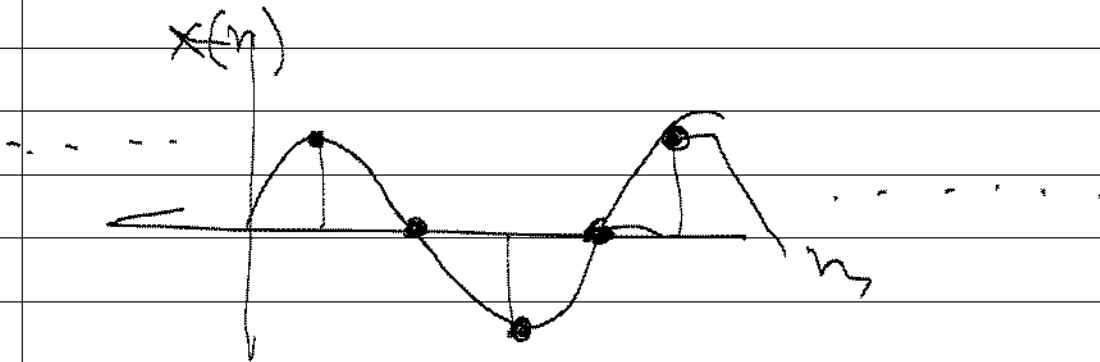
$$X(6) = X(2)$$

$$X(3) = \sin \frac{3\pi}{2} = -1$$

$$X(4) = \sin \frac{4\pi}{2} = 0$$

X is PERIODIC BECAUSE $X(n) = X(n+n_0)$

$n_0 \rightarrow$ PERIOD = 4 SAMPLES



QUESTION #2

$$y(n) = -x(n+4)$$

Domain $1 \leq n \leq 4 \Rightarrow 1 \leq n+4 \leq 4 \Rightarrow -3 \leq n \leq 0$
 $5 \leq n \leq 7 \Rightarrow 5 \leq n+4 \leq 7 \Rightarrow 1 \leq n \leq 3$

RANGE: $n \Rightarrow -(n+4) = -n-4$
 $9-n \Rightarrow -[9-(n+4)] = -5+n$

So
$$y(n) = \begin{cases} -n-4 & -3 \leq n \leq 0 \\ -5+n & 1 \leq n \leq 3 \\ 0 & \text{OTHERWISE} \end{cases}$$

