Fall 2018 - Quiz 1 ECE 301: Signals and Systems

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Problem 1

For the signals in figure 1 sketch the even and odd parts.



Figure 1: Problem 1

Problem 2

For the following questions, determine if the signals are periodic or not. If periodic, find their fundamental period.

- a . Even{ $|\sin(2\pi t)u(t)|$ }
- b. Odd{ $|\sin(2\pi t)u(t)|$ }
- c . $\sin(\frac{n}{8} 7)$
- d . $\cos(\frac{\pi}{4}n+1) + \sin(\frac{\pi}{8}n+3) 2\cos(\frac{\pi}{6}n+\frac{\pi}{6})$

Problem 3

Consider a Discrete Time signal $e^{j\omega_0 n}$

- a . Which is a higher frequency? $\omega_0 = \frac{\pi}{4}$ or $\omega_0 = \frac{\pi}{2}$. What is the fundamental frequency in both the cases?
- **b** . What value of ω_0 gives the highest frequency? Sketch the corresponding signal.
- c . If $\omega_0=2,$ is this signal periodic? If yes, find the fundamental period. If no, justify your answer.