

Utah State University
ECE 3640
Homework # 6
Due Friday, Feb 24, 2006

- Reading

1. Chapter 3

- Homework:

1. (20 pts) Problem 3.4-3(a,b,c,d).
2. (10 pts) For the Fourier series obtained in 3.4-3(a), make plots using MATLAB of the first n nonzero terms of the series, where:
 - $n = 1$
 - $n = 2$
 - $n = 5$
 - $n = 15$.

On the plot for $n = 15$ nonzero terms, identify the effect of Gibbs phenomenon.

3. (10 pts) Problem 3.4-4
4. (10 pts) Problem 3.4-5
5. (5 pts) The square wave function $f(t)$ of Figure 3.8 is the input voltage for the circuit . Using a computer tool (such as MATLAB), make a plot of the input $f(t)$

expressed as a Fourier series (e.g., equation (3.61)) and the output function $y(t)$, expressed as a Fourier series. Take enough terms in the Fourier series to get a good plot of the output signal.