

UNIVERSITY OF TEXAS AT DALLAS
Telecommunications Engineering

TE3302 Signals & Systems

Problem Set #2: Exponentials and Generalized Sinusoids

Date assigned: September 6, 2000

Date due: September 13, 2000

Homework is due at the beginning of class. Late homework will not be accepted.

Reading: *Signals & Systems*, ch. 1

You may use any computer program to help you solve these problems, check answers, etc.

Problem 2.1 Express $x(t) = -3 \cos w_0 t + 4 \sin w_0 t$ as a single sinusoid.

Problem 2.2 Using Matlab to Plot Signals

Plot $4e^{-2t}$ for $-1 \leq t \leq 1$ using the Matlab script below. Turn in the printout of the plot.

```
dt = 1/10;           %% time increment
tt = -1 : dt : 1;    %% vector [-1, -.99, ..., .99, 1]
xx = 4*exp(-2*tt);
plot(tt, xx), grid   %% time-domain plot
title( 'Section of exponential function' ), xlabel('time (sec)')
```

Problem 2.3 Using Matlab to Plot Signals

Write a Matlab script to plot $4e^{-2t} \cos(6t - 60^\circ)$ for $-2 \leq t \leq 2$. Assume the time increment $dt = 1/100$. Turn in the printout and the script.