INSTRUCTIONS

Please complete this assignment with your assigned group members. The assignment is due in class on Tuesday, October 4, 2005.

1. Exercise 4.3, Page 177, Problem 31

2. Exercise 4.3, Page 178, Problem 36.
   (a) Problem 21 in part(a) is Exercise 4.3, Page 177, Problem 21.
   (b) **Hint for part (b):** Let $y(t)$ be the expression in formula (21). Assume $d_1 = A + iB$ and $d_2 = C + iD$ and apply Euler’s theorem in (21). Show that $A = C$ and $B = -D$ if $y(t)$ is to be real. This will show that $d_1$ and $d_2$ are complex conjugates of each other.

3. For given real numbers $\alpha$ and $\beta$, where $\beta \neq 0$, we want to show that the solutions $y_1(t) = e^{\alpha t} \cos \beta t$ and $y_2(t) = e^{\alpha t} \sin \beta t$ are linearly independent. Show that equation (11) on page 163 does NOT hold for any real number $\tau$.

