MAT 239 (Differential Equations), Prof. Swift
Worksheet 17, on Repeated and Complex Roots of the Char. Eqn.

1. Find the general solution of the ODE $y'' - 6y' + 9y = 0$ for $y(t)$.

2. Find the general solution of the ODE $y'' + 2y' + 5y = 0$ for $y(t)$.

3. Suppose one solution to a 2nd order linear homogeneous ODE with constant coefficients (LHODECC) is $y(t) = 5e^{2t}\cos(3t)$.

(a) What is the general solution of the ODE? (Frank Sinatra: "You can't have one with the other.")

(b) What are the roots of the characteristic equation?

(c) What is the ODE?