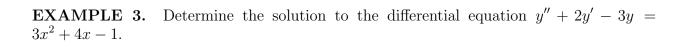
Lec	35:	Nonhomogeneous	Linear Ec	nuations.	cont'd ((17.2)	

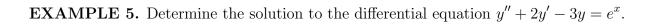
In this lecture we will continue our discussion on nonhomogeneous second order differential equations and we will turn our attention to the method of **undetermined coefficients**. In this method, we simply guess what the solution might look like, and then solve for the precise coefficients.

EXAMPLE 1. Determine the solution to the differential equation $y'' + 6y' + 5y = e^{3x}$.

EXAMPLE 2. Determine the solution to the differential equation $y'' + 2y' - 3y = \sin x$.



EXAMPLE 4. Determine the solution to the differential equation $y'' + 2y' - 3y = (x^2 + 4)e^{2x}$.



In summary: To find the particular solution to the nonhomogeneous differential equation ay'' + by' + cy = F(x) guess a general solution of the same form as F(x). If your initial guess already appears in the homogeneous solution then multiply it by an x (or x^2 if necessary). In general it is good to guess if you see polynomials, exponentials, and sines or cosines.