

**UNIVERSITY OF NEW BRUNSWICK**  
**DEPARTMENT OF MATHEMATICS & STATISTICS**

*MATHEMATICS 3503: Differential equations for engineers (Winter 2010)*  
*Assignment 2 (due: Wednesday January 20, 2010)*

In problems 1 - 4, find the general solution using the method of undetermined coefficients.

1.  $y'' + y' - 12y = -24x$ .

2.  $y'' - y' - 6y = e^{2x}$ .

3.  $\ddot{x}(t) + 2x(t) = \sin t + \cos t$ .

4.  $\frac{d^2y}{dt^2} + y = \sin t + \cos t$ .

Find the complementary function and the form of the particular solution for the method of undetermined coefficients. **Do not determine** the coefficients.

5.  $\frac{d^2y}{dt^2} + 4\frac{dy}{dt} + 13y = e^{-2t} \sin 3t + 2 \sin 3t$ .

6.  $y'' - 2y' + y = x + xe^x$ .