

**Homework #6**

Math 527, UNH spring 2014

**Due Tuesday, February 27th in recitation**

**The usual instructions:** Solve the problems. AWE and ADTSTTBOTE. Be neat and organized. Write your name, Math 527, your section number, and “HW 6” in the upper-right corner.

**Problems 1-6.** Find the general solution of the differential equation using the method of judicious guessing. The “prime” notation indicates differentiation:  $y' = dy/dx$ , etc.

1.  $y'' + y' - 6y = 2x$

2.  $y'' - 10y' + 25y = 30x + 3$

3.  $4y'' - 4y' - 3y = \cos 2x$

4.  $y'' - y' + y/4 = 3 + e^{x/2}$

5.  $y'' - 16y = 2e^{4x}$

6.  $y'' - 2y' + 5y = e^x \cos 2x$

**Problems 7 and 8.** Solve the initial value problem.

7.  $y'' + 4y' + 4y = (3 + x)e^{-2x}$ ,  $y(0) = 2$ ,  $y'(0) = 5$

8.  $y'' - y = \cosh x$ ,  $y(0) = 2$ ,  $y'(0) = 12$