PROBLEM SET

Assignment #3

Math 3350-01, Second Summer Session 2004

July 21, 2004

- Write all of your answers on separate sheets of paper. You can keep the question sheet.
- You **must** show enough work to justify your answers. Unless otherwise instructed, give exact answers, not approximations (e.g., $\sqrt{2}$, not 1.414).

Good luck!

The problems to be turned in are due on Monday, July 26.

Problem 1.

In each part, find the general solution of the given differential equation.

A.
$$y'' + 3y' + 5y = 0.$$

B.
$$y'' + 6y' + 9y = 0.$$

C.
$$y'' - 10y' + 9y = 0.$$

D. **Turn in.**
$$y'' + 4y' + 13y = 0.$$

E.
$$(D-2)(D+3)^2(D-5)^3y = 0.$$

F.
$$D^3(D-2)^2y = 0.$$

G. **Turn in.**
$$D(D-2)^2(D+3)^3y = 0.$$

H.
$$(D-1)(D-2)^2(D^2+6D+34)^2y = 0.$$

I. **Turn in.**
$$D^2(D-2)^2(D^2+2D+5)^3y = 0.$$

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100 pts.

Problem 2. In each part,**Use the Method of Undetermined Coefficents** to find the general solution of the given differential equation.

A.
$$(D^2 + D - 6)y = x^2 + 1.$$

B.
$$(D^2 - 4D + 3)y = x^2.$$

C.
$$(D^2 - 2D)y = x.$$

D.
$$(D^2 + 2D)y = x^2.$$

E.
$$(D^2 + D - 6)y = xe^{5x}.$$

F. **Turn in.**
$$(D^2 - 4D + 3)y = x^2e^{2x}.$$

G.
$$(D^2 + D - 6)y = xe^{2x}.$$

H. **Turn in.**
$$(D^2 - 4D + 3)y = x^2e^{3x}.$$

I.
$$(D^2 + 4)y = x^2 \sin(x).$$

J.
$$(D^2 - 2D + 5)y = e^{2x} \cos(3x).$$

K.
$$(D^2 + 4)y = x^2 \sin(2x).$$

L. **Turn in.**
$$(D^2 - 2D + 5)y = xe^x \sin(2x).$$

In Section 2.10 of the book, do 1–3, 4*, 5, 6*, 8–10, 11, 12*, 13–15, 16*. Turn in the starred problems.