

Turn in starred problems Tuesday 09/16/2007.

Multiple-page homework must be STAPLED when handed in.

The problems from 4.2.6 below illustrate the various possibilities for the Frobenius method: all three cases of Theorem 4.3.1 occur, and for case (iii) there is an example in which there is a logarithm in the solution and one in which there is not. I am asking you to hand in two of these, but I strongly suggest that you work out all of them at least to the point that you can see the second solution emerging.

In problem 8, notice that this is an Euler equation. Notice also that there is another way to solve it: let $u(x) = y'(x)$ and solve the resulting first order linear equation for $u(x)$. You should see that the same solution occurs both ways.

Section 4.3:

- 6. *(a), (b), (e), (f), *(i)
- 8.
- 9. (a) (solve as a series in powers of x), (b)