Homework Set 11. Due Friday November 18 at 10.30 am

1. Do (3.2) of Goldbart and Stone, p. 99.

2. Do (3.5) of Goldbart and Stone, p. 100.

3. Consider the differential equation

$$-\frac{d^2y}{dx^2} + 2x\frac{dy}{dx} = 0. \tag{1}$$

   a) By substituting $y = \tilde{y}w$ reduce this differential equation to a differential equation for $\tilde{y}$ for which the coefficient of $d\tilde{y}/dx$ vanishes. Determine w.

   b) Find the solutions of the differential equal for $\tilde{y}$, (use the result of last week's homework).

   c) What are the solutions of the original differential equation? Check your results.