McGill University
Math 325A: Differential Equations
Assignment 3B: due Thursday, September 28, 2000

1. One morning it began to ssnow very hard and continued to snow steadily through the day. A snowplow set out at 8:00 A.M. to clear a road, clearing 2 miles by 11:00 A.M. and an additional mile by 1:00 P.M. At what time did it start snowing. (You may assume that it was snowing at a constant rate and that the rate at which the snowplow could clear the road was inversely proportional to the depth of the snow.)

2. Find, in implicit form, the general solution of the diferential equation

$$y^3 + 4ye^x + (2e^x + 3y^2)y' = 0.$$

Given x_0, y_0, is it always possible to find a solution such that $y(x_0) = y_0$? If so, is this solution unique? Justify your answers.