3.4: Repeated Roots and Reduction of Order

Examples:
$y'' + 2y' + y = 0$

Solve the IVP $4y'' + 4y' + y = 0$, $y(1) = 1$, $y'(1) = 1$. Describe the behavior of the solution as t increases.

Show that $y_1 = t$ is a solution to the ODE $t^2 y'' + 2ty' - 2y = 0$, $t > 0$. Find a second solution y_2 and verify that y_1 and y_2 form a fundamental set of solutions.