Math 363 Homework Due Monday, October 2

Problem 2.3–18. Proceed as follows.

a. Write the given second-order differential equation as a system of two first-order differential equations with $v = \dfrac{dy}{dt}$.
b. Use pplane or HPGSystemSolver to generate a phase-plane portrait.
c. Find two nonzero solutions that are not multiples of each other. (All you have to do here is find two solutions that are not multiples of each other. You can do this by finding two different exponential solutions.)
d. Plot the solution $y(t)$ versus t for the initial conditions $y(0) = -1$, $y'(0) = 2.1$. (Part d doesn't have anything to do with part c—at least as far as this homework is concerned. You are **not** asked to find an analytical or exact solution with the given initial conditions. All you have to do is **plot** the solution with the given initial conditions. You can do this easily using pplane or HPGSystemSolver. No messy hand calculation is needed!)

CAUTION!

If you use HPGSystemSolver, you have to be very careful with variable names because HPGSystemSolver doesn't let you choose the names of the dependent variables. Make sure that your final results are expressed in terms of the variables given in the problems.