Warm-up Problems - February 27, 2006

Extra Credit?
(If my signature is here write down your name turn it in for extra credit. No signature? Arrive earlier!)

1. If $C$ is a constant, find the derivative:
   
   (a) $y = -3x + \frac{C}{x}$
   
   (b) $y = \frac{x}{x} - 1 + \frac{C}{x}$
   
   (c) $y = -1 + Cx$

Lecture Problems

2. Draw the slope field for the differential equations
   
   (a) $y' = y + 1$
   
   (b) $\frac{dy}{dx} = x + 1$

3. Verify that the given solutions are really solutions to the given differential equations.
   
   (a) $xy' + 1 = x - y$
   
   $y = \frac{x}{2} - 1 + \frac{C}{x}$.
   
   (b) $xy' = y + 1$
   
   $y = -1 + Cx$

4. Given the general solutions, solve the initial value problem.
   
   (a) $xy' + 1 = x - y, y(1) = 2$
   
   $y = \frac{x}{2} - 1 + \frac{C}{x}$.
   
   (b) $xy' = y + 1, y(2) = 5$
   
   $y = -1 + Cx$