Math 307 Quiz 2

April 11, 2014

Problem 1. Use the method of integrating factors to find a solution to the differential equation
$$\sin(t)y' = -\cos(t)y + 2t$$
satisfying the initial condition $y(\pi/2) = 1$.

Problem 2. Use the method of variation of parameters to find the *general* solution to the differential equation

$$y' + y = \sin(t).$$

Problem 3. Find two different solutions to the differential equation

$$y' = y^{1/3},$$

both satisfying the initial condition $y(0) = 0$. (Note: this is an example where a solution to a differential equation exists, but is not unique.)