> *It's a horrible feeling when you don't understand why you did something.*

Name and section: _____

1. (5 points) Find the unique solution to the differential equation $y'' + 2y' + y = 0$ with initial conditions $y(0) = 1, y'(0) = 2$.

2. (a) (2 points) Find the general solution to the homogeneous equation $y'' + 9y = 0$ (using only real-valued functions).

(b) (2 points) Find a particular solution to the inhomogeneous equation $y'' + 9y = e^t$.

(c) (1 point) Find the general solution to the inhomogeneous equation $y'' + 9y = e^t$.