Worksheet 9.1 and 9.3

Full Name: _____ Score: _____

1. (a) Verify that e^t and e^{2t} are both solutions of the differential equation $y'' - 3y' + 2y = 0$.

(b) Now, let C_1 and C_2 be any constants. Verify that $C_1e^t + C_2e^{2t}$ is a solution of the differential equation $y'' - 3y' + 2y = 0$.

2. Find the general solutions of the following differential equations.

(a) $\dfrac{dy}{dx} = \dfrac{3x^2}{5y^4}$

(b) $\dfrac{dy}{dx} = \dfrac{y^2}{x}$

3. Find the solution that satisfies the given initial condition.

(a) $\dfrac{dy}{dx} = 2y, \qquad y(0) = 4.$

(b) $\dfrac{dy}{dx} = x\cos^2 y, \qquad y(1) = 0.$

(c) $\dfrac{dy}{dx} = -y(y-10), \qquad y(0) = 5$