MATH 240: Midterm 2

July 10, 2015

Name:

Instructor:

Problem	1	2	3	4	5	6	7	8	Total
Points									

(1) Find the general solution to

$$y'' - 2y' + 2y = 0.$$

(2) Find the general solution to

$$y'' + 4y = \sec(2x).$$

(3) Find the solution to the initial value problem,

$$y'' + y = e^x, \qquad y(0) = 1, \quad y'(0) = 0.$$

(4) Find the general solution to

$$y'' - y = 2xe^x.$$

(5) Solve the initial value problem

$$y'' + 3y' + 2y = \delta(t-1) \qquad y(0) = 0, y'(0) = 0.$$

(6) Using Euler's method with step size $h = \frac{1}{2}$, approximate $y(1)$ if

$$\frac{\mathrm{d}y}{\mathrm{d}x} = 2y, \qquad y(0) = 1.$$

(7) Match the initial value problem to the graph of the solution:

(8) Solve the initial value problem

$$y'' + 9y' + 8y = f(t), \qquad y(0) = 0, \quad y'(0) = 0.$$