

Name _____
Student I.D. _____

Math 2250-010
Quiz 6 Take-home
February 28, 2014

Due at the start of class on Monday

1a) Consider the differential equation for $y(x)$

$$y''(x) + 6y'(x) + 8y(x) = 0.$$

Find the general solution to this homogeneous differential equation. Hint: the solution space has a basis consisting of exponential functions.

(4 points)

1b) Verify that $y(x) = 4x - 3$ is a solution to the inhomogeneous differential equation

$$y''(x) + 6y'(x) + 8y(x) = 32x.$$

(1 points)

1c) Combine your work from a, b to deduce the general solution to the inhomogeneous DE in b. Then use this general solution to solve the initial value problem

$$\begin{aligned}y''(x) + 6y'(x) + 8y(x) &= 32x \\ y(0) &= -2 \\ y'(0) &= 0.\end{aligned}$$

(5 points)