

Name _____

Student I.D. _____

Math 2250-4

Quiz 8

March 8, 2013

1) Consider the differential equation for $x(t)$, which could arise in a model for mechanical motion:

$$x''(t) + 4x(t) = 0.$$

1a) Find the general solution to this differential equation.

(3 points)

1b) What kind of damping (if any) is present in this differential equation and exhibited by its solutions?

(1 point)

1c) Use your work in (1a) to solve the initial value problem

$$x''(t) + 4x(t) = 0$$

$$x(0) = 2$$

$$x'(0) = -4.$$

(3 points)

1d) Find the amplitude, period, and time-delay for the solution to 1c). Since the phase angle turns out to be an "elementary" angle, you should be able to express the time delay explicitly in radians.

(3 points)