

Quiz 1, Math 246, Professor David Levermore
Tuesday, 30 January 2018

Your Name:

Discussion Instructor (circle one):	Kilian Cooley	Corry Bedwell	Thien Ngo	
Discussion Time (circle one):	8:00	9:00	10:00	11:00

No books, notes, calculators, or any electronic devices.

Show your reasoning for full credit. Good luck!

- (1) [4] For each of the following ordinary differential equations, determine its order and whether it is linear or nonlinear. If it is nonlinear, circle a term that makes it so.

(a) $w'''' + \sin(2t)w' = 2w + 5e^t$

(b) $h''' - 2\cos(h)h'' = 4\sin(3t)$

- (2) [4] Solve the initial-value problem

$$x \frac{dv}{dx} + 3v = 5x^2, \quad v(2) = 3.$$

- (3) [2] What is the interval of definition for the solution of the initial-value problem

$$\frac{du}{dz} + \frac{e^z}{z^2 - 64} u = \frac{\cos(z)}{z^2 - 16}, \quad u(-6) = 2.$$

(You do not have to solve the differential equation to answer this question!)