

Quiz 5, Math 246, Professor David Levermore
Thursday, 1 March 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] Given that e^{4t} and e^{-4t} are linearly independent solutions to $x'' - 16x = 0$, find the natural fundamental set of solutions to this equation associated with $t = 0$.

- (2) [5] Give a real general solution to the equation

$$(D^2 + 4D + 20)^2(D + 3)^4v = 0, \quad \text{where } D = \frac{d}{dt}.$$

- (3) [1] Give a real general solution to the equation

$$u'' + 4u = 15e^t,$$

given that $3e^t$ is a solution to it and that $\cos(2t)$ and $\sin(2t)$ are a fundamental set of solutions to the associated homogeneous equation.