

Quiz 4, Math 246, Professor David Levermore
Thursday, 22 February 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) [3] Determine the interval of definition for the solution to the initial-value problem

$$v''' + \frac{1}{2-t} v'' - \frac{e^t}{3+t} v = \frac{\cos(3t)}{7-t}, \quad v(-1) = v'(-1) = v''(-1) = 5.$$

- (2) [4] Given the fact that e^t and $t e^t$ are solutions of $u'' - 2u' + u = 0$, solve the general initial-value problem associated with $t = 0$ — namely, solve

$$u'' - 2u' + u = 0, \quad u(0) = u_0, \quad u'(0) = u_1.$$

- (3) [3] Compute the Wronskian $\text{Wr}[U_1, U_2](t)$ of the functions $U_1(t) = e^t$ and $U_2(t) = t e^t$. (Evaluate the determinant and simplify.)