

Second Exam

Tuesday, July 7, 2015

This exam is closed book, but you may use calculators. Make sure your name is on all pages. Show all work, and show it in a logical and organized manner. You may generally use graphing calculators, but you may not use any device with wireless communication capabilities. The first problem is worth 30 points and the second problem is worth 70 points.

1. Compute the Wronskian of $y_1(t) = \cosh(t)$, $y_2(t) = \sinh(t)$, where

$$\cosh(t) = \frac{1}{2}(e^t + e^{-t}) \text{ and } \sinh(t) = \frac{1}{2}(e^t - e^{-t}).$$

(*Hint: $\cosh'(t) = \sinh(t)$ and $\sinh'(t) = \cosh(t)$.)*)

2. Compute the solution to the initial value problem

$$y'' + 6y' + 9y = e^{-3t}, \quad y(0) = 0, \quad y'(0) = 0.$$