Practice Quiz 1 Math 2280, Ordinary Differential Equations, Fall 2023

Name: A#:

Problem 1. Section 1.3c (10 points) For each differential equation given three choices for a possible solution $y = y(x)$ are given. Determine whether each choice is or is not a solution to the given differential equation. (In each case, assume the interval of interest is the entire real line $(-\infty, \infty)$

$$\frac{d^2y}{dx^2} = 9\ y$$

i.) $y(x) = e^{3x}$ **ii**.) $y(x) = x^3$ **iii**.) $y(x) = sin(3x)$

Solution:

Problem 2. Section 1.4c (10 points) For each initial value problem given below, three choices for a possible solution, $y = y(x)$ are given. Determine whether each choice is or is not a solution to the given initial-value problem.

$$\frac{d^2y}{dx^2} - 9\ y = 0$$

with $y(0) = 1$ and $y'(0) = 9$.

i.) $y(x) = 2e^{3x} - e^{-3x}$ **ii**.) $y(x) = e^{3x}$ **iii**.) $y(x) = e^{3x} + 1$

Solution: