Quiz 1

MATH 2280, ORDINARY DIFFERENTIAL EQUATIONS, SPRING 2024

NAME: A#:

Problem 1. Exercise 1.4a (10 points) For the initial-value problems give below, three choices for a possible solution $y = y(x)$ are given. Determine whether each choice is or is not a solution of the given initial-value problem.

$$\frac{dy}{dx} = 4\ y$$

with $y(0) = 5$.

i.) $y(x) = e^{4x}$, **ii.)** $y(x) = 5\ e^{4x}$, **iii.)** $y(x) = e^{4x} + 1$

Solution:

Problem 2. Exercise 2.4d (10 points) Solve the following initial problem (using the indefinite integral). Also, state the largest interval over which the solution is valid (i.e., the maximal possible interval of interest).

$$x\,\frac{dy}{dx} + 2 = \sqrt{x}$$

with $y(1) = 6$.

Solution: