Practice Quiz 6 Math 2280, Ordinary Differential Equations, Fall 2023

NAME: A#:

Problem 1. Chapter 9 Ex.2a For the given differential equation construct the slope field on the 2×2 grid.

$$\frac{dy}{dx} = \frac{1}{2}\left(x^2 + y^2\right)$$

at

$$(x, y) = (0, 0), (1, 0), (0, 1), (1, 1)$$

Solution:

Problem 2. Chapter 9.4 (10 points) On page 173 of the textbook is a slope field for some first order differential equation.

a Sketch the graphs of solutions to this differential equation that satisfy

i. $y(0) = 2$

ii. $y(0) = 4$

iii. $y(0) = 4.5$

b. What approximately, is $y(4)$ is y is the solution of the different equation satisfying

i. $y(0) = 2$?

ii. $y(0) = 4$?

iii. $y(0) = 4.5$?

Solution: