Jacobs University
Spring 2020

April 15, 2020

# Calculus and Linear Algebra II

# Quiz 5

**Instructions:**

- Do all the work on this quiz paper.
- Show your work, i.e., write down the steps of your solution cleanly and readable.
- Electronic devices and notes are not allowed.

**Name:** _____

**Problem 1 [8 points]**

Find the solution to the first-order ordinary differential equation $\frac{dy}{dx} = \lambda\sqrt{y}$ for any $\lambda > 0$ using separation of variables (it is ok to only find $y(x)$ for $x > 0$). Write down your solution using the general initial data $y(0) = y_0 \geq 0$.

**Problem 1 (extra space)**

**Problem 2 [7 points]**

Compute the determinant of

$$\begin{pmatrix} 1 & 2 & 3 \\ 0 & 1 & 2 \\ 1 & 3 & 2 \end{pmatrix}.$$

Clearly state which property or method you use in each step of the computation.

**Problem 2 (extra space)**