**Your Name:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **Section: \_\_ \_\_**

**Spring 2022**

*first last*

As a convenience, this **answer template** is provided if you wish to easily submit your work. Be sure to save it as a PDF before submitting online!

**Note: You must also submit a copy of your MATLAB Live Script to receive full grades.**

**Lab 4: Parameterized System of Equations: Zero, One Infinity Theorem**

Consider the following parameterized system of linear equations with two unknowns:

**Line 1:**

**Line 2:**

**Answer 1:** The determinant of is: \_ \_ \_ \_

**Answer 2:** The determinant of is zero for these values of *m*.

\_ \_ \_ \_, \_ \_ \_ \_ and \_ \_ \_ \_

**Question 3:** Replace the sample plot with your completed plot for credit.

Grader will award one point for **4a** or **4b** at random.

**Answer 4a:** In the case where , the fully reduced augmented matrix is:

Is the system consistent? \_\_ \_\_ \_\_

**Answer 4b:** In the case where , the fully reduced augmented matrix is:

How many solutions are there? \_\_ \_\_ \_\_

**Answer 5:** In the case where , the fully reduced augmented matrix is:

Is the system consistent? \_\_ \_\_ \_\_

Grader will award one point for **6a** or **6b** at random.

**Answer 6a:** After simplification the augmented matrix is:

Give the missing components in exact form using

and integers. Do **not** use decimal approximations.

**A few components are given for free!**

**Answer 6b:** Now row reduce. The reduced augmented matrix is:

**Hint:** All entrees are integers now.

**Answer 7:** In the case where , but is otherwise symbolic, the fully reduced augmented matrix is:

The **unique** solution is:

**A few components are given for free!**

**Question 8:** Root Counting: Replace the sample graph with your completed plot.

Your image must **not** have the angry kitten.

**Answer 9:** The angle (in degrees) the blue line makes with the horizontal axis is:

**a.** 155 **b.** 160 **c.** 165 **d.** 170

**Answer 10:** The unique solution (in terms of *m*) using Cramer's rule is:

\_ \_ \_ \_ \_ \_ \_ \_ \_ \_

Be sure to apply simplify first!

**Ready to Submit?**

Be sure all ten questions are answered. When your lab is complete, be sure to submit three files:

1. Your **completed Answer Template** as a PDF file
2. A copy of your **MATLAB Live Script**
3. A **PDF** copy of your **MATLAB Live Script** (Save-Export to PDF…)

The due date is the day after your lab section by **11:59pm** to receive full credit. You have one more day, to submit the lab (but with a small penalty), and then the window closes for good and your grade will be zero.