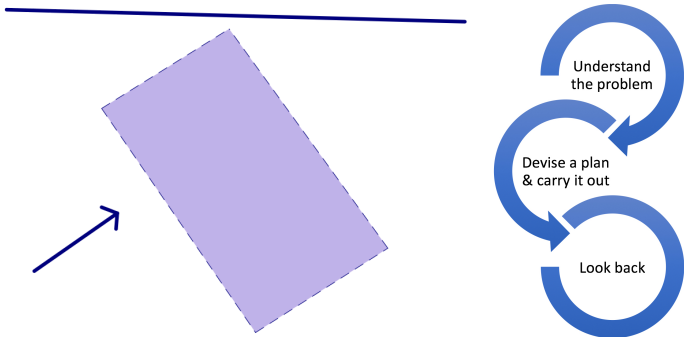


Math 2240: Introduction to Linear Algebra



- Linear Objects
- Linear Operations: Addition and Scalar Multiplication
- Critical analysis and creative inquiry
- Why / why not?
- Diverse perspectives and disciplines (alg, geom, computer, applications...)



Evelyn Boyd Granville

second black woman we know of—PhD in mathematics

Image 1 Credit: <http://www.visionaryproject.org/granvilleevelyn/>

Image 2 Credit: Marge Murray. Courtesy of Evelyn Boyd Granville

...this was the most interesting job of my lifetime—to be a member of a group responsible for writing computer programs to track the paths of vehicles in space



Evelyn Boyd Granville

second black woman we know of—PhD in mathematics

Image 1 Credit: <http://www.visionaryproject.org/granvilleevelyn/>

Image 2 Credit: Marge Murray. Courtesy of Evelyn Boyd Granville

...this was the most interesting job of my lifetime—to be a member of a group responsible for writing computer programs to track the paths of vehicles in space

Rabbits and chickens have been placed in a cage. You count 48 feet and seventeen heads. Let x = rabbits, y = chickens.

1. heads? 2. feet? 3. solve—three different methods?



Grading and Policies

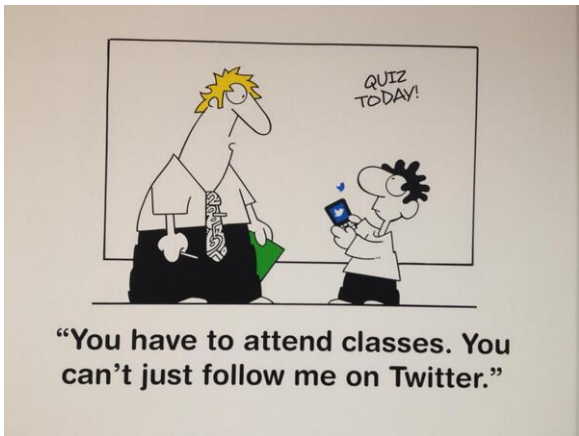
- **Effective Class Engagement 5%**
attendance is required, class activities, resources on ASULearn, office hours, forums, and Zoom
- **Online (Part 1) & Paper (Part 2) Homework 5%** good effort
- **4 Problem Sets 30%** [alone or in a group of 2]
annotate and show/print all by-hand/Maple work
- **2 Exams 50%**
- **Final Research Presentations 10%**

no late work, but lowest set is dropped and accommodations for emergencies with documentation

- work due by start of class (can send it with other student)
- under my 326 office door before I leave for class
- or even turn in on ASULearn if need be, but I prefer printed
- if university cancels classes, plan for scheduled homework or problem sets to still be due unless there is guidance from the university otherwise, plus plans for missed class

Critical Academic Indicators

- Attendance
- Engagement with material (in and outside of class)
- Interaction with each other (faculty and other students)



<https://pbs.twimg.com/media/BrfN9JzCQAAfNgE.jpg>

Part 1 HW: Instantaneous Feedback *Check*, Repeatable

Quiz navigation

2x2

1 2 3

True/False

4 5 6 7

3x3

8

yes for all k ✗ look for $k(s)$ that makes row 2 column 2 nonzero in Gaussian to have a pivot.
So you have to eliminate two k 's that give a missing pivot

- only when $k = \pm 1$
- only when $k \neq \pm 1$
- other

The correct answer is: only when $k \neq \pm 1$

Part e) Does this system ever have infinitely many solutions, for a k ?

- yes
- no ✓

The correct answer is: no

Part f) How many solutions are there for a k so that $k \neq \pm 1$? ✗

Part g) How many solutions are there for a k so that

Incorrect
try again. you have
full pivots

General Feedback after *Submit all and finish*

True or False:

The **solution** set of a linear system involving variables x_1, \dots, x_n is a list of numbers (s_1, \dots, s_n) that makes each equation in the system a true statement when the values (s_1, \dots, s_n) are substituted for x_1, \dots, x_n respectively.

For true/false questions, the book instructs: if a statement is false, provide a specific counterexample. If it is true, quote a phrase and page number from the book.

- True and I found a phrase and page number from the text ✗ it is false-write down a system that has infinite **solutions** and see how the part that reads "is a list of numbers" is a problem
- False and I can provide a counterexample
- other

Mark 0.00 out of 1.00

The correct answer is: False and I can provide a counterexample

Check

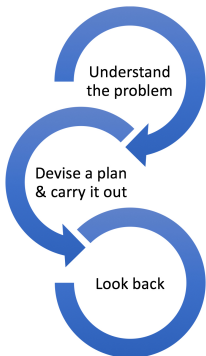
A system with infinite **solutions** would provide a counterexample, because the **solution** set would be all assignments of the numbers, not just one assignment of them that works. The problematic text here is "is a list of numbers"



Material from Calc II

- algebraic solutions of linear equations
partial fractions
- visualizations and equations of curves and surfaces and
linear intersections in 2D and 3D
rectangle and box slicing, both visually and algebraically
- limits applied to diverse objects
like improper integrals and partial sums of series
- sin and cos trigonometry
trig substitution
- linear approximations
Taylor polynomial of degree 1, Euler's method, and slope
field
- mathematical reasoning and justifications
algebraic, numerical, and geometric reasoning

George Polya: *How to Solve it*



- Review as needed to understand the terms. What are you asked to find or show? Can you restate in your own words?
- There are many reasonable ways to solve problems. Best learned by practicing.
- Take the time to reflect and look back at what worked, and what didn't. Ensure that you have answered all parts of the question. Finally think about connections or extensions.

Where to Get Help



- Class
- Office hours
- Math lab
- Google *Dr. Sarah* for course calendar
- ASULearn (Solutions, Discussion Forums, Glossary)

I care about you and your success!



<http://alangregerman.typepad.com/.a/6a00d83516c0ad53ef0168e783575e970c-800wi>

