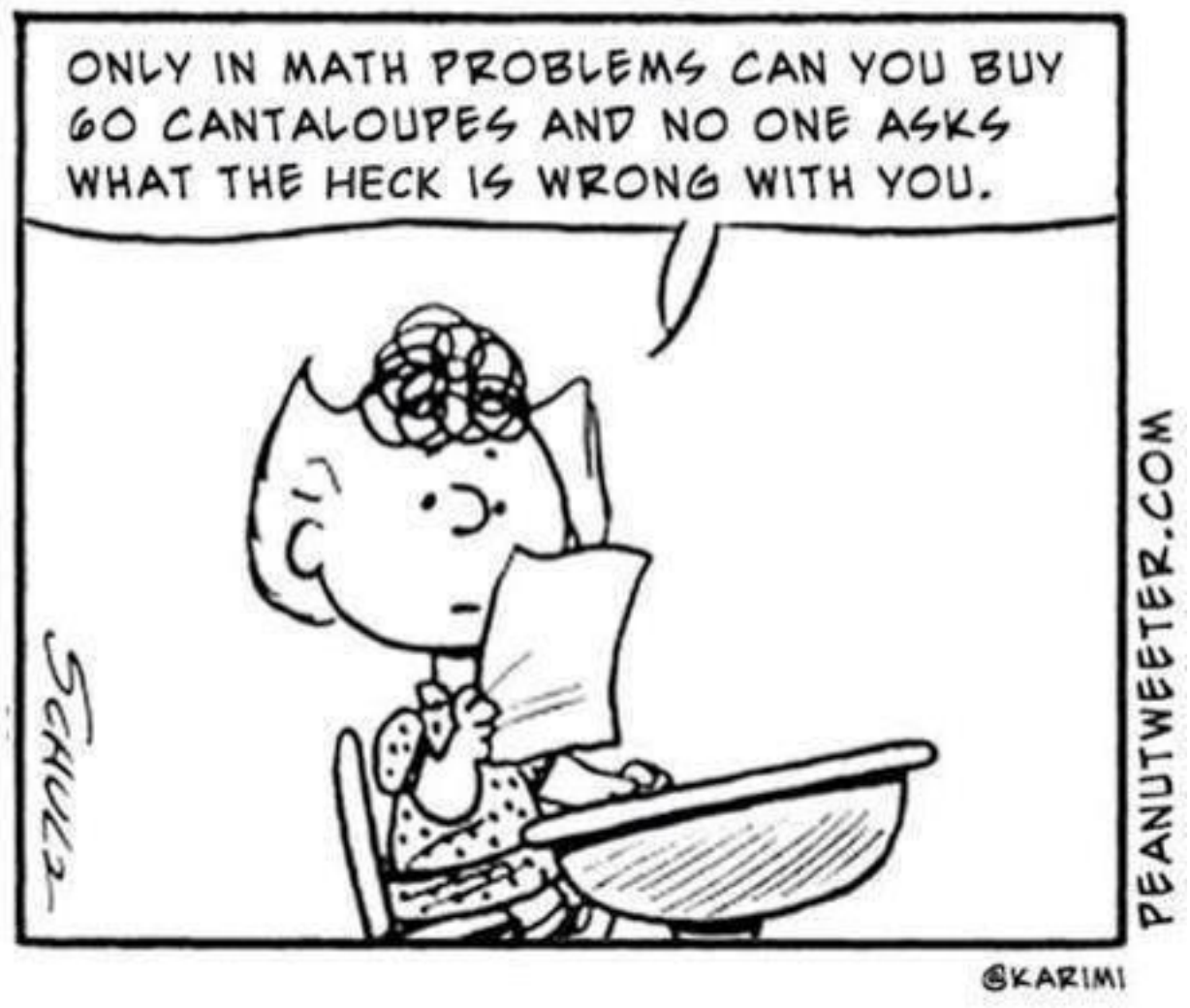
Pre-Calculus

Quarter Two (Pt 1)



"Nothing is more active than thought, for it travels over the universe, and nothing is stronger than necessity, for all must submit to it." -Thales

Overview

The first half of this quarter, we will be taking a closer look at linear systems, and how to apply matrix notation to manipulate large sets of data. In doing so, we will be able to transform values we know to find multiple ones we are looking for. Applications of this include the use of excel spreadsheets, the organization of business profits and expenses, as well as more theoretical breakthroughs such computer science algorithms and the formulation of quantum physics. In addition, we will take a quick glance at patterns, series, and sequences.

Lessons: Linear Systems and Matrices, Quadratic Equations

____ **7.3:** Multi-Variable Linear Systems	} **10/23 - 10/27**
____ **7.4:** Matrices and Systems of Equations	
____ **7.5:** Operations with Matrices	} **10/30 – 11/3**
____ **7.7:** The Determinant of a Square Matrix	} **11/6 - 11/9**
____ **7.8:** Applications of Matrices of Determinants	
____ **7.6:** The Inverse of a Square	} **11/13 - 11/17**
____ **8.1:** Sequences and Series	

Individual/Group Work

Guiding question 5:

How can you use systems of linear equations to solve systems of linear equalities? How do we address solving for 3 variables? Four Variables? Five variables? What is the best method of organizing that much data?

____ ***19)*** Vocabulary: **row-echelon form, reduced row-echelon form, ordered triple, gaussian elimination, independent, dependent, matrix, identity matrix** (do one of the below).

a. Write the words, their definitions, and an example for each of the above terms in your notebook.

b. Create a mind-map with connections, a story, or a drawing with captions that shows the connections between the above terms.

c. Create vocabulary cards of the above terms. Be sure to include an example for each.

____ ***20)*** **Problem Sets:** You will find the problems in the textbooks in the classroom **OR** in the pdf form on Google Classroom. You must complete the whole set (and show your work) for full credit. Make sure you use the selected answers in the back of the book to check your work.

____ a. 7.3: Multivariable Linear Systems (p.505 #'s 1 through 29 odds, 49)

____ b. 7.4: Matrices & Systems of Equations (p.521 #'s 1 through 35 odds, 41, 43, 49, 55)

____ c. 7.5: Operations with Matrices (p.536 #'s 1-7 odds, 25-37 odds)

____ ***21)*** **Graphic Organizer:** Complete the graphic organizer showing the parallels between solving a system of equations by substitution (or elimination) and by using the Gauss-Jordan Elimination method with matrices.

____ ***22)*** ***ASSESSMENT:*** Linear Equalities and Introduction to Matrices (7.3, 7.4, 7.5)

(Friday, November 3rd)

Guiding question 6:

How can we summarize a matrix as a single number, and what physical applications does this number have? How can you mathematically represent a sequence of numbers?

____ ***23)*** Vocabulary: **square matrix, determinant, area of a triangle, collinear points, inverse matrix, sequence, recursive, factorial, summation notation** (do one of the below).

a. Write the words, their definitions, and an example for each of the above terms in your notebook.

b. Create a mind-map with connections, a story, or a drawing with captions that shows the connections between the above terms.

c. Create vocabulary cards of the above terms. Be sure to include an example for each.

____ ***24)*** **Problem Sets:** You will find the problems in the textbooks in the classroom **OR** in the pdf form on Google Classroom. You must complete the whole set (and show your work) for full credit. Make sure you use the selected answers in the back of the book to check your work.

____ a. 7.7: The Determinant of Square Matrix (p.556 #'s 1-11 odds, 15-31 odds)

____ b. 7.8: Applications of Matrices and Determinants (p.240 #'s 1-13 odds, 41-45 odds)

____ c. 7.6: The Inverse of a Square Matrix (p.547 #'s 1-19 odds, 29, 31, 37, 39)

____ d. 8.1: Sequences and Series (p. 587 #'s 1-25 odds, 43-51 odds, 57, 59, 71-85 odds)

____ ***25) Desmos Activity:*** Refer to the google classroom post on "Sequences and Series" and follow the link/use the code (will be posted 11/17). This will give you additional and interactive practice with the concepts.

____ ***27)*** ***ASSESSMENT:*** Determinants, Inverses, and Sequences/Series (7.7, 7.8, 7.6, 8.1)

(Friday, November 17th)