

Today we discuss

1. the topics covered in MA 242 in general terms and
2. how this course will operate.

Rough Outline of MA 242

1. Linear Equations and Transformations
  - (a) row reduction
  - (b) solution sets of linear equations
  - (c) linear transformations
2. Matrix Algebra
  - (a) matrix operations
  - (b) invertible matrices
  - (c) computer graphics
3. Determinants
  - (a) definition and properties
  - (b) geometric interpretation
4. Abstract vector spaces
  - (a) vector spaces and subspaces
  - (b) bases and dimension
5. Eigenvalues and eigenvectors
  - (a) eigenspaces
  - (b) diagonalization
6. Orthogonal sets and matrices

Linear programming example:

Vitamin	Food 1	Food 2	Required Amount
A	30 units/ounce	20 units/ounce	120 units
B	40 units/ounce	10 units/ounce	80 units
C	20 units/ounce	40 units/ounce	100 units
Cost	10 cents/ounce	15 cents/ounce	

Fractal examples: Consider the square

$$S = \{(x, y) \mid 0 \leq x \leq 1, 0 \leq y \leq 1\}$$

and three different ways to “map”  $S$  inside of itself.