Math 2270–3
Review sheet for exam 1, on September 25, 2009

We will spend at least part of Wednesday's class reviewing for the exam, which is on Friday. Most of the Thursday problem session will also be exam review – we'll probably go over parts of the practice exams.

The exam will cover chapters 1–3.3, plus the affine transformation concepts we needed to draw fractals.

Chapter 1:
  *linear systems
  *geometric meanings
  *rref(A | b) and rref(A) to determine solution characterstics

Chapter 2 plus affine transformations:
  *linear transformations (concrete and abstract definitions)
  *affine transformations (translation composed with linear)
  *geometric properties (e.g. parallel lines get mapped to parallel lines, grids to grids)
  *geometric transformations (scalings, rotations, projections, reflections, shears, general case)
  *inverse transformations and matrices
  *compositions and product matrices
  *matrix algebra

Chapter 3: subspaces of R^n
  *subspace
  *image, kernel
  *linear dependence and independence
  *span
  *possible subspaces of R^n
  *basis, how to find bases
  *dimension
  *rank + nullity theorem, i.e. dim(image(f))+dim(kernel(f))=dim(domain space).

Exam will be a mixture of computational and theoretical – the practice exams give indications of the kinds of questions I like to ask.