These notes are courtesy of Prof. Dan Yasaki.
We have covered a good bit this semester. I try to hit some of the highlights below.

(1) Since we started from scratch, a good portion of the class time was spent developing a language so that we could speak linear algebra to each other. Words are important, and you cannot answer a question if you do not know what the words mean.
   (a) kernel
   (b) image
   (c) linear transformation
   (d) basis
   (e) dimension
   (f) vector space
   (g) subspace
   (h) linearly independent, linearly dependent
   (i) orthogonal
   (j) eigenvalue,eigenvector,eigenbasis,eigenspace
   (k) isomorphism
   (l) diagonalizable matrix
   (m) rank, nullity

(2) We have learned some techniques along the way. You need to be able to use them in specific examples.
   (a) Gaussian elimination: Important for solving linear systems, computing the rank of a matrix, checking whether or not a set of vectors is linearly independent, finding a basis for the kernel of a matrix, finding a basis for the image of a matrix, computing the inverse of a matrix, shortcut for computing determinant of a matrix, ....
   (b) Gram-Schmidt: Used to construct an orthonormal basis for a space given a basis. We like orthonormal because they allow us to compute projections easily. We like projections because they tell us the closest point in a subspace to a given vector in the ambient space.
   (c) Finding eigenvalues and eigenvectors: these sometimes help us to choose a basis under which the linear transformation under study becomes represented by a diagonal matrix, which is very useful in applications.
   (d) Computing determinants: We saw that determinants tell us whether a given square matrix $A$ is invertible. We used this idea to find the conditions that a real number had to satisfy in order to be a eigenvalue of $A$.
   (e) Coordinates: Given a matrix, you should be able to express the corresponding transformation in different coordinates. Also, given a transformation (not as a matrix), you should be able to express it in coordinates.

(3) Rank-Nullity Theorem: This is a useful result.