Part I (due Wednesday, April 24 at the beginning of class)

Read the first page of the goldenrod Diagonalization handout.

Part II: Exercises (due by class time Wednesday, April 24)

Try Examples 1 and 2 on the goldenrod Diagonalization handout.

Part III: Homework (due Wednesday, May 1 by 2:30 PM)

1. True or False? If true, prove; if false, give an explained counterexample.
   (a) If $\vec{v}$ and $\vec{w}$ are eigenvectors for A, both corresponding to the eigenvalue λ, then any linear combination of $\vec{v}$ and $\vec{w}$ is also an eigenvector for A corresponding to λ.
   (b) If $\vec{v}$ and $\vec{w}$ are eigenvectors for A corresponding to distinct eigenvalues, then any linear combination of $\vec{v}$ and $\vec{w}$ is also an eigenvector for A.

Running list of vocabulary words that could be a quiz word

- linear equation
- system of linear equations
- linear combination of a set of vectors
- span of a set of vectors
- linearly independent
- linearly dependent
- reduced row echelon form
- pivot
- homogeneous system
- free variable
- row equivalent
- consistent system
- inconsistent system
- trace of a matrix
- transpose of a matrix

- inverse of a matrix
- elementary matrix
- transformation
- domain
- codomain
- range
- vector space (I will not ever ask you to define this on a quiz—the definition is way too long—but you should make sure you know what makes something a vector space)
- subspace
- basis
- finite-dimensional vector space
- dimension
- coordinate vector
- column space of A
- row space of A
- null space of A
- rank
- nullity
- linear transformation
- kernel
- range
- isomorphism
- isomorphic vector spaces
- characteristic equation
- eigenvector
- eigenvalue