For Skills Check 2, you should be able to give a mathematically precise definition of the following:

- Linear transformation (in general)
- Inverse of a linear transformation
- Inverse of a matrix
- Elementary matrix
- Rank of a matrix
- Subspace
- Basis
- Dimension
- Range
- Null space
- Row space
- Column space

You should be able to state the following theorems:

- The Rank-Nullity Theorem
- At least three conditions equivalent to an $n \times n$ matrix being invertible. (see The Invertible Matrix Theorem)

You should be able to do the following computations:

- Given a linear transformation T, compute $T(\vec{v})$.
- Given a linear transformation T, find a matrix for T.
- Find the inverse of a matrix.
- Use several different methods to determine whether or not a matrix is invertible.
- Determine whether or not a transformation is linear.
- Determine whether or not something is a subspace.
- Given a subspace, find a basis for it and compute its dimension.
- Describe the range and null space of a linear transformation.
- Give a basis for the range and null space of a linear transformation.
- Describe the row space, column space, and null space of a matrix.
- Give a basis for the row space, column space, and null space of a matrix.

All of these are in addition to the items on Skills Check 1.