

These are the topics that you should prepare for.

1. Convert a system of linear equations to an augmented matrix and conversely convert an augmented matrix to a system of equations.
2. Convert a matrix to REF or RREF as asked, using only the standard operations as taught. Correct notation must be displayed.
3. Read off solutions from a given final form of an augmented matrix.  
In case of REF use necessary back substitution.  
In case of RREF, read off the solutions in parametric form.
4. Learn what is meant by the rank of a matrix.  
Learn the definition of independence and dependence of columns in  $\mathfrak{R}^n$ . Be sure to learn various forms of the definition.  
Learn the definition of the span of a given set of vectors.
5. Learn the main fact that the rank of a matrix is less than or equal to the minimum of number of its rows and the number of its columns.
6. Learn why given  $n$  columns in  $\mathfrak{R}^m$  are dependent if  $n > m$  and cannot span  $\mathfrak{R}^m$  if  $n < m$ .  
Learn how to use it to answer questions about matrices.
7. Given a transformation  $T$  from  $\mathfrak{R}^n$  to  $\mathfrak{R}^m$  learn what it means to say that it is a linear transformation.
8. Learn the definition of standard basis vectors  $e_i^n$  and the shortened notation  $e_i$ .
9. Given a linear transformation  $T$ , learn how to find the matrix  $A$  such that  $T(X) = AX$  for all  $X$  (the standard matrix  $M_T$  of  $T$ .)
10. Learn how to determine if a given linear transformation is injective or surjective using the REF of its standard matrix.