

MIDTERM REVIEW

You should be familiar with the following topics:

- The correspondence between systems of linear equations and matrices.
- Linear geometry in \mathbb{R}^2 and \mathbb{R}^3 : adding and multiplying vectors, lines, planes, points...
- Parametric descriptions of solution sets for linear equations.
- The geometry of solutions sets: for instance, you should geometrically why a system of two linear equations in three variables cannot have a unique solution.
- The algebra of solution sets: for instance, you should also be able to say why the above is impossible using reduce row echelon form.
- Row reduction, reduced row echelon form, row echelon form and how to find a parametric descriptions for solution sets using them.
- Finding the inverse of the matrix, and determining when a matrix has no inverse.
- Matrix multiplication and addition, etc.
- How to interpret the entries of the matrix in physical situations, as on the homework.
- Rudiments of vector spaces: in particular, the vector space problems on the homework and the material presented in Friday's class.

I will also put at least one problem on the exam that comes straight from your homework sets. While the emphasis of the test will not be on strict proofs, I may very well ask you for lots of intuitive explanations or quick conceptual arguments.

Your book can be useful too... some relevant sections are 1.3 (on matrix operations, in particular the cars example), the material in Chapter 2 besides the linear perspective stuff, and the material in Chapter 3 up until he starts talking about inverses. The vector space stuff is covered in chapter 5. That said, I will not ask you anything that I haven't presented in class.