The linear Algebra requirement for 237

The following list outlines the Linear Algebra topics in the textbook. Reference is to the sections of the textbook by Folland.
Please note that the Quiz 1 on Linear Algebra is a more specific subset of this list, and the information for that quiz can be found under the Quizzes section.

1.1 $\mathbb{R}^n$ and its Algebraic properties, dot product and its Algebraic properties, norm and its Algebrais properties, both Euclidean (or two) norm and the infinity norm (see inequality 1.3), *Schwarz inequality, triangle inequality*, orthogonality.

1.2 Parametric equation of a line passing through a point $\boldsymbol{a}$ along a vector $\boldsymbol{h}$,

2.2 Projection (an application of dot product), equation of a plane,

2.3 Convex combination of two points (to generate the line segment connecting the two points)

2.5 Kramer's rule

2.8 eigen values and eigen vectors, change of coordinates and diagonalizing a symmetric matrix.

2.9 parallel vectors

2.10 Linear transformations: their basic properties, composition, and matrix representation. Rank of a matrix, and the relationship with the determinant of square submatrices.

3.1 systems of linear equations and solving them using matrix inversion, and the condition for having a unique solution

3.3 Linear dependence, linear independence, and relationship to Cross product of vectors in $\mathbb{R}^3$.

3.4 Linear transformations and their matrix representation.

4.4 Linear transformations, elementary matrices, relationship to determinant, non linear transformations such as the change of coordinates (polar, cylindrical, spherical)

5.1 dot product and projections

5.3 cross product as the area of the parallelogram

5.4 properties and Algebra of cross product and dot product

5.8 Convex combination of two points.