

**Final Examination – Take-home part**

due at the final examination period

*(50 points of 200)*

An undergraduate course in linear algebra usually covers

real vector spaces, subspaces, linear independence, bases, inner products, linear operators from  $\mathbf{R}^n$  to  $\mathbf{R}^m$ , kernel and range, change of basis, diagonalization of symmetric matrices, determinants, row operations,

but *not*

complex scalars, infinite-dimensional spaces, direct sums, adjoint operators, Fredholm theory, factor spaces, Jordan canonical form, dual spaces, tensors.

Compose a final exam for such a course, and provide an answer key.

Good judgment in the choice of questions is important, as well as technical correctness. Feel free to add comments to clarify the rationale of the questions.