Source: 2020MATH530/KBe2020math530index.md

#ref #disorganized #incomplete

1 | #definition dimension

The dimension of V (denoted dim V is the length of a basis in V - This relies on Axler2.35: Basis length does not depend on the basis Any two bases of a finite-dimensional vector space have the same length

1.1 | Results

1.2 | Axler2.38 Dimension of a subspace

If V is finite-dimensional and U is a subspace of V, then dim $U \leq$ dim V - Intuitive. The basis of a subspace is shorter than the basis of the original vecspace, because otherwise it's span would be larger than the original vecspace (because bases are linearly independent + len lin-indep $\leq$ len span).

1.3 | Axler2.39 Linearly independent list of the right length is a basis

All lists of the length dim V are finite dimensional.
