

On Riesz and Schauder bases and frames

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The concept of (Hamel) basis is undoubtedly the queen of elementary linear algebra, as evidenced by the many results on finite-dimensional vector spaces whose proofs make use of it. However, as nice as the world of finite-dimensional spaces might be, real-world applications demand the use of infinite-dimensional spaces. Hamel bases are not as useful a tool in infinite-dimensional Hilbert spaces, and that is when orthonormal bases come in. Nevertheless, there are situations where orthonormal bases are undesirable or unattainable, so several generalizations have been defined. Frames and Schauder bases are two of those generalizations; hence it is only natural to wonder about the relationship between them. In this (non-comprehensive) survey talk we will explore some aspects of that relationship.