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The Rank of Principal Submatrices and a Principal Rank Property

We discuss problems related to the rank of the principal submatrices of a given matrix. Specifically, what properties matrices possess to ensure that their rank can be obtained as the order of the largest invertible principal submatrix. Such a property has been called a principal rank property and is known to hold for symmetric matrices among other classes. In addition to identifying properties of such a matrix, we also obtain a construction in order to identify these maximal invertible principal submatrices. This work represents joint research with Dr. Ryan Tifenbach.