1 A new class of g-inverses and order relations on index 1 matrices

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In this paper we introduce two new classes of g-inverses of a matrix A of index 1 over an arbitrary field. We obtain some properties of these generalized inverses and identify the class of all commuting g-inverses as one of the classes of these new classes of g-inverses. The problem of one sided sharp order has been also studied and these new g-inverses have been found very useful in characterizing it. We also give conditions under which one sided sharp order becomes full sharp order. Finally we study the sharp order for partitioned matrices.