

GENERALIZED INVERSES

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Abstract. In this survey paper we present some aspects of generalized inverses, which are related to inner and outer invertibility, Moore-Penrose inverse, the appropriate reverse order law, and Drazin inverse.

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CONTENTS

1. Motivation.....	13
2. Notations.....	15
3. Inner and Outer Generalized Inverse.....	17
4. Moore-Penrose Inverse.....	20
5. Reverse Order Law for the Moore-Penrose Inverse.....	23
6. Drazin Inverse.....	26
7. Conclusion.....	31
Acknowledgements.....	31
References.....	31

1. Motivation

A general idea of solving linear equations in Banach spaces can simply be described by the equation

$$Ax = b \tag{1}$$

where A is a linear operator and b is a given vector. The problem is how to find the solution of the above equation. There are several situations: the solution exists and it is unique, the solution exists but it is not unique, or there is no solution of the equation. If A is invertible, then $x = A^{-1}b$ solves the problem. If A