Matriks invers Moore-Penrose dan aplikasinya pada matriks laplacian = Moore-Penrose inverse on matrices and its application on laplacian matrices

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Abstrak

Invers Moore-Penrose merupakan perumuman invers pada matriks bujur sangkar. Setiap matriks dengan entri bilangan kompeks memiliki invers Moore-Penrose dan invers Moore-Penrose dari suatu atriks adalah tunggal. Ketunggalan invers Moore-Penrose dapat digunakan sebagai pengganti invers pada matriks persegi maupun persegi panjang. Dalam skripsi ini, dibahas konstruksi invers Moore-Penrose melalui f1g􀀀invers, f1;2g􀀀invers, f1;2;3g􀀀invers, f1;2;4g􀀀invers, f1;3g􀀀invers, dan f1;4g􀀀invers. Kemudian, dibahas pula konstruksi invers Moore-Penrose dari matriks Laplacian dan beberapa sifat invers Moore-Penrose dari matriks Laplacian. Pada Teorema 4.4, invers Moore-Penrose dari matriks Laplacian memenuhi persamaan LL† = L†L = I􀀀 1n J, dengan J merupakan matriks berukuran n n yang setiap entrinya bernilai satu. Sehingga, invers Moore-Penrose dari matriks Laplacian dapat digunakan sebagai pengganti invers matriks Laplacian.
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Moore-Penrose inverse is a generalized inverse from square matrices. Every matrix with complex entries has a unique Moore-Penrose inverse. Uniqueness of Moore-Penrose inverse can be used as a substitute inverse on square or rectangular matrices. In this skripsi, the construction of Moore-Penrose inverse is explain through f1g􀀀inverse, f1;2g􀀀inverse, f1;2;3g􀀀inverse, f1;2;4g􀀀inverse, f1;3g􀀀invers, and f1;4g􀀀invers. Moreover, the construction of Moore-Penrose inverse for Laplacian matrices, as well as some properties of the inverse, is also discussed. In Theorem 4.4, Moore-Penrose inverse satisfy the equation LL† = L†L = I􀀀 1 nJ, where J is an n n matrix with all entries are one.;Moore-Penrose inverse is a generalized inverse from square matrices. Every matrix with complex entries has a unique Moore-Penrose inverse. Uniqueness of Moore-Penrose inverse can be used as a substitute inverse on square or rectangular matrices. In this skripsi, the construction of Moore-Penrose inverse is explain through f1g􀀀inverse, f1;2g􀀀inverse, f1;2;3g􀀀inverse, f1;2;4g􀀀inverse, f1;3g􀀀invers, and f1;4g􀀀invers. Moreover, the construction of Moore-enrose inverse for Laplacian matrices, as well as some properties of the inverse, is also discussed. In Theorem 4.4, Moore-Penrose inverse satisfy the equation LL† = L†L = I􀀀 1 nJ, where J is an n n matrix with all entries are one.