The 3x3 MIT theorem

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Abstract

In this paper, I describe the 3x3 MIT theorem.
The paper ends with "The End"

Introduction

The 3x3 MIT theorem is useful in many fields including engineering, economics, finance and statistics.
In this paper, I describe the 3x3 MIT theorem.

The 3x3 MIT theorem

$$\begin{pmatrix} a & b & c \\ d & e & f \\ g & h & i \end{pmatrix} = \begin{pmatrix} a & b & c \\ d & e & f \\ g & h & i \end{pmatrix}^{-1} = \begin{pmatrix} a & b & c \\ d & e & f \\ g & h & i \end{pmatrix}^{T}$$

$$\Longleftrightarrow$$

$$((a=-1 \vee a=1) \wedge b=0 \wedge c=0 \wedge d=0 \wedge (e=-1 \vee e=1) \wedge f=0 \wedge g=0 \wedge h=0 \wedge (i=-1 \vee i=1))$$

$$\vee$$

$$\left((a=-1 \vee a=1) \wedge b=0 \wedge c=0 \wedge d=0 \wedge \left(f=-\sqrt{1-e^2} \vee f=\sqrt{1-e^2}\right) \wedge g=0 \wedge h=f \wedge e^2-1 \neq 0 \wedge i=-e\right)$$

$$\vee$$

$$\left((a=-1 \vee a=1) \wedge (c=-ib \vee c=ib) \wedge d=b \wedge b \neq 0 \wedge e=\frac{1}{2}a\left(b^2-2\right) \wedge f=\frac{abc}{2} \wedge g=c \wedge h=f \wedge i=\frac{1}{2}\left(-ab^2-2a\right)\right)$$

$$\vee$$

$$\left(\left(b=-\sqrt{1-a^2} \vee b=\sqrt{1-a^2}\right) \wedge c=0 \wedge d=b \wedge e=-a \wedge f=0 \wedge g=0 \wedge h=0 \wedge (i=-1 \vee i=1) \wedge a^2-1 \neq 0\right)$$

$$\vee$$

$$\left(\left(c=-\sqrt{-a^2-b^2+1} \vee c=\sqrt{-a^2-b^2+1}\right) \wedge d=b \wedge a^2-1 \neq 0 \wedge \left(e=\tfrac{-a+b^2-1}{a+1} \vee e=\tfrac{a+b^2-1}{a-1}\right) \wedge a^2+b^2-1 \neq 0 \wedge f=\tfrac{bc(a+e)}{a^2+b^2-1} \wedge g=c \wedge h=f \wedge i=\tfrac{-a^3-2ab^2+a-b^2e}{a^2+b^2-1}\right)$$

The End