

Answer on Question #67456 – Math – Linear Algebra

Question

Is there a solution for $AX = B$ matrix equation with zero diagonal constraint, such that: $X_{ii} = 0$?

Is it right to solve the equation as follows?

$$X = A^{-1}B$$

$$X_{ii} = 0$$

Solution

Solving the equation $AX = B$:

$$A^{-1}AX = A^{-1}B$$

$$EX = A^{-1}B$$

$$X = A^{-1}B$$

where E is identity matrix.

The diagonal values of X are already determined by $A^{-1}B$ and cannot be separately constrained.

It is possible to have $X_{ii} = 0$ if the diagonal of $A^{-1}B$ consists of zeros.