M3 RVW

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12. Suppose A is a linear transformation from the x-y plane to itself. Why does $A^{-1}(x+y) = A^{-1}x + A^{-1}y$? If A is represented by the matrix M, explain why A^{-1} is represented by M^{-1}.

This follows from the definition of a linear transformations:

$$A(cx+dy) = c(Ax) + d(Ay)$$

or, in our case,

$$A^{-1}(x+y) = A^{-1}x + A^{-1}y$$

But I'm guessing that's not what this means.

Since the vectors x and y are linearly independent,