Long Linear Matrix

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Continuing on with Matrix Addition, I found a missing method, an assumed method really. The problem was another addition of equations utilizing matrices. I will add the problem below. I expected that there may be something to find, but this was quite a surprise. For this problem, there was no solution in the back of the book when I checked. Carefully, I assigned each variable to the corresponding value when I noticed that more variables were required than were given. Brushing off the spirits of frustration, I furthered the variables. A new type of matrix was needed for the real solution to be found. Having some placement qualities, it behaves appropriately alongside the other added matrices. The behavior of the nested equations converts into behavioral data and information the more in detail the work is mathematically. Instead of general input, this behavioral data reveals the maintenance of an equation. This is to verify the accuracy of the equation and its surrounding mathematics. I will explain below in the example as best I can.

Add the following set of equations using Matrix Addition:

$$\begin{cases} (3+2i)z_1 + (-2+4i)z_2 = 2+i \\ (4+4i)z_1 + (-7+7i)z_2 = 4-i \end{cases}$$

$$\begin{cases} 3z_1 + (4-4i)z_2 = 6 \\ z_1 + (2+2i)z_2 = 7-i \end{cases}$$

The given formula was: $Az = b$

These are the added formulas that I appended:

$A = xi + yi = xi$

$b = qi + ti = qi$

Re-attribution Method

Using xi and qi will be fine later on or for repetitive calculations. I call these types (xi and qi) of equations re-attribution methods since they are not the initial fully inquired solution.

$$x_1 = \begin{bmatrix} 3 & -2 \\ 4 & -7 \end{bmatrix} \quad y_1 = \begin{bmatrix} 2 & 4 \\ 4 & 7 \end{bmatrix} \quad i_{1a} = \begin{bmatrix} 0 & i & 0 & i \\ 0 & i & 0 & i \end{bmatrix}$$

$$x_2 = \begin{bmatrix} 3 & 4 \\ 1 & 2 \end{bmatrix} \quad y_2 = \begin{bmatrix} 0 & -4 \\ 0 & 2 \end{bmatrix} \quad i_{2b} = \begin{bmatrix} 0 & 0 & 0 & i \\ 0 & 0 & 0 & i \end{bmatrix}$$

I used this solution for more data representation.

Although unconventional, this reveals more information.

$$b = q_1 = \begin{bmatrix} 2 \\ 4 \end{bmatrix} \quad t_1 = \begin{bmatrix} 1 \\ -1 \end{bmatrix} \quad i_{1c} = \begin{bmatrix} 0 & i \\ 0 & i \end{bmatrix}$$

$$q_2 = \begin{bmatrix} 6 \\ 7 \end{bmatrix} \quad t_2 = \begin{bmatrix} 0 \\ -1 \end{bmatrix} \quad i_{2c} = \begin{bmatrix} 0 & 0 \\ 0 & i \end{bmatrix}$$

$$q_{1+2} = \begin{bmatrix} 8 \\ 11 \end{bmatrix} \quad t_{1+2} = \begin{bmatrix} 1 \\ -2 \end{bmatrix} \quad i_{1c+2c} = \begin{bmatrix} 0 & i \\ 0 & 2i \end{bmatrix}$$

$$A = x_{1+2} = \begin{bmatrix} 6 & 2 \\ 5 & -5 \end{bmatrix} \quad y_{1+2} = \begin{bmatrix} 2 & 0 \\ 4 & 9 \end{bmatrix} \quad i_{1a+2b} = \begin{bmatrix} 0 & i & 0 & 2i \\ 0 & i & 0 & 2i \end{bmatrix}$$

Back to Conventional:

$$z_a = \begin{bmatrix} z_1 \\ z_2 \end{bmatrix} \quad z_b = \begin{bmatrix} z_1 \\ z_2 \end{bmatrix} \quad z_{a+b} = \begin{bmatrix} 2z_1 \\ 2z_2 \end{bmatrix}$$

z_{a+b} is reflecting the number of sets of equations here. This type of data is indeed very valuable! It's worth the extra effort to calculate this in all of our programs!

My Answer:

$$\begin{cases} (6+2i)2z_1 + (2+2i)2z_2 = 8+i \\ (5+4i)2z_1 + (-5+18i)2z_2 = 11 \end{cases}$$