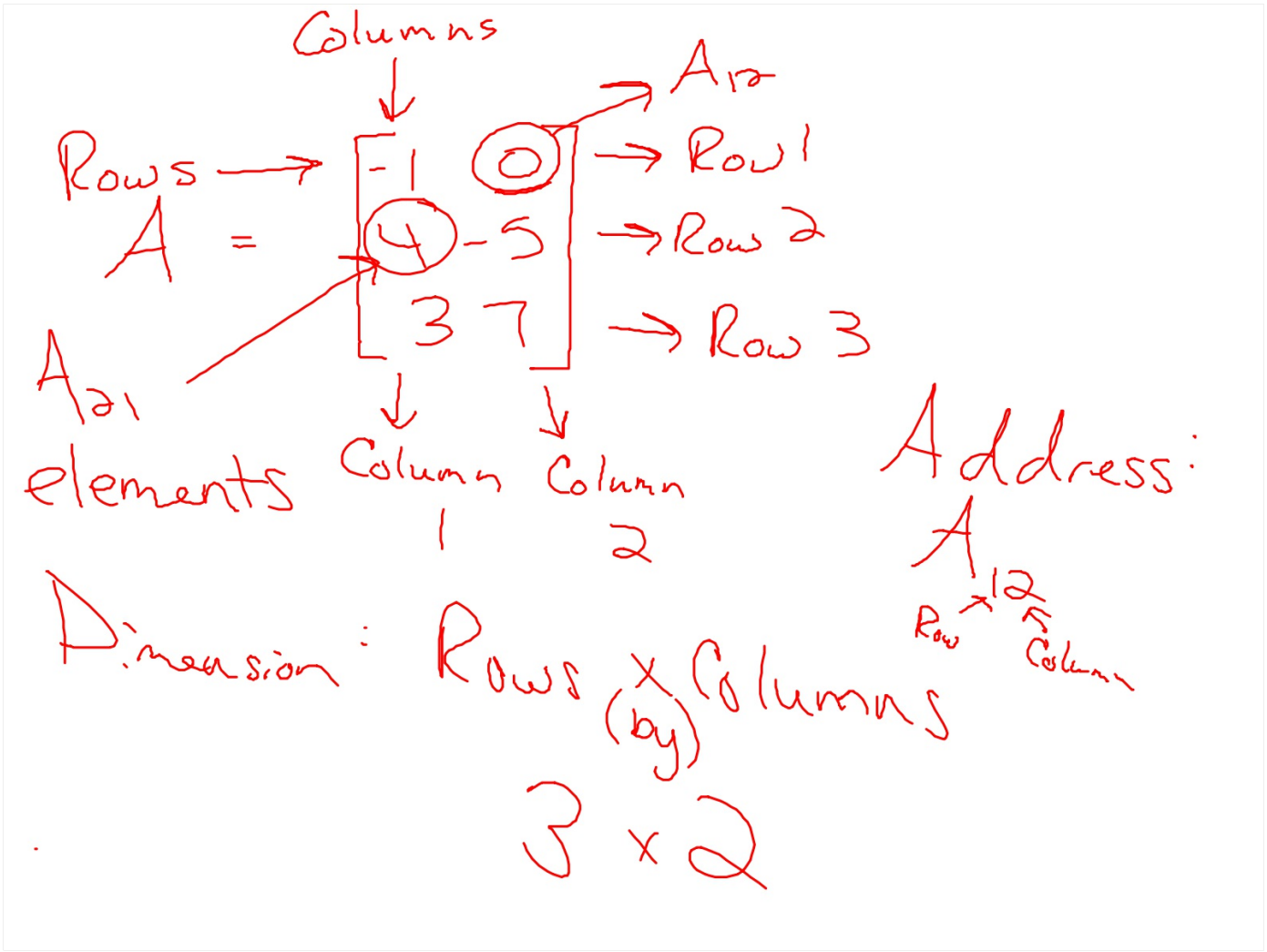

Columns
Rows
A =
-1 0
4 -5
3 7
A12
Row 1
Row 2
Row 3
A21
elements
Column 1
Column 2
Address:
A12
Row
Column
Dimension: Rows (by) Columns
3 x 2

Matrix Addition

$$\underset{A}{\begin{bmatrix} 2 & 3 \\ 5 & -1 \end{bmatrix}} + \underset{B}{\begin{bmatrix} 3 & 4 \\ 9 & 11 \end{bmatrix}}$$

$$\underset{C}{\begin{bmatrix} 5 & 7 \\ 14 & 10 \end{bmatrix}}$$

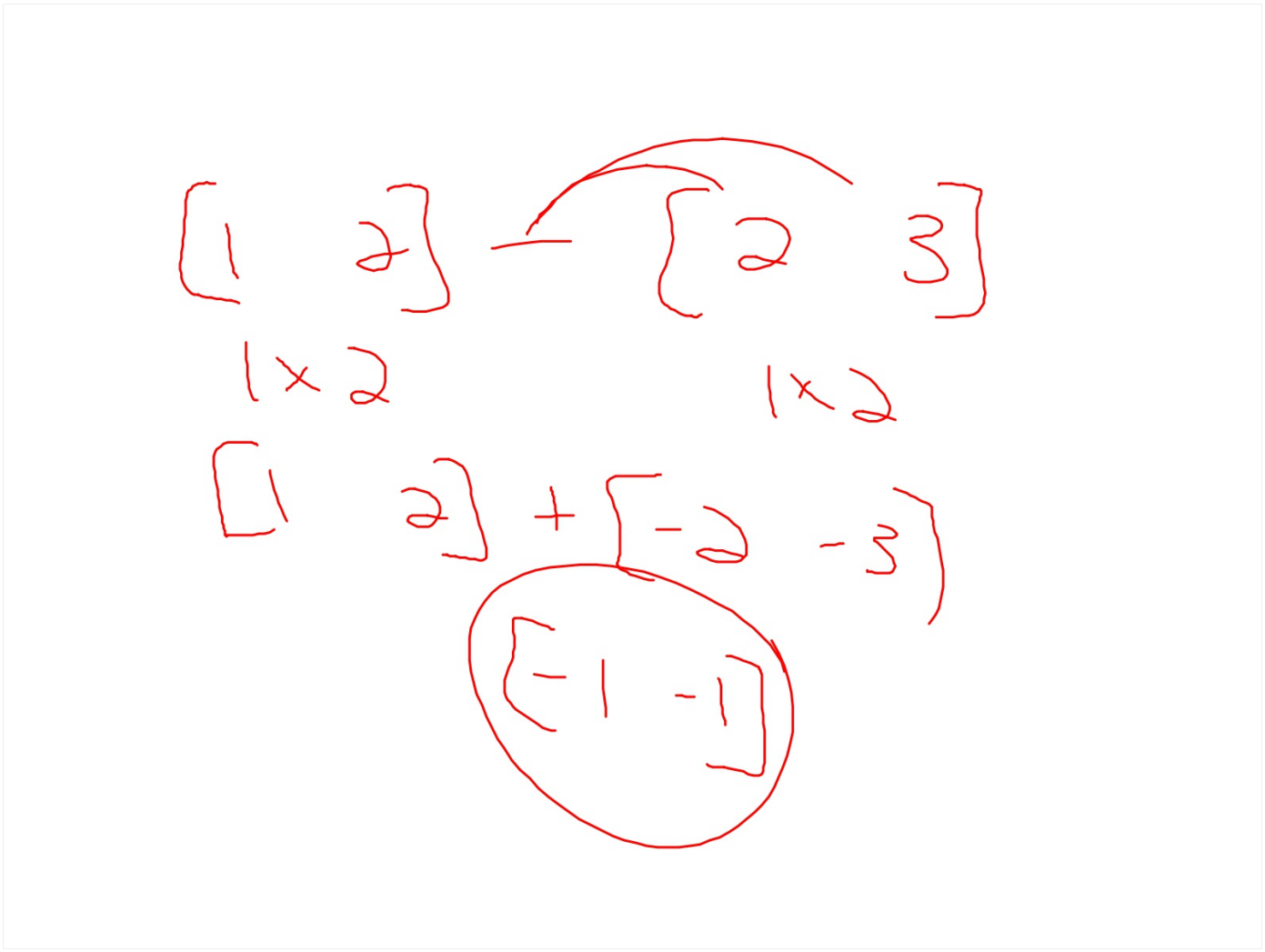
- Both (all) matrices must be the same size/dim
- Add the elements with the same address from each matrix

#1 -

$$M = \begin{bmatrix} 82 & 54 & 8 & 0 \\ 44 & 62 & 71 & 124 \\ 50 & 93 & 85 & 43 \end{bmatrix} \quad 3\times4$$

$$F = \begin{bmatrix} 91 & 46 & 39 & 5 \\ 22 & 45 & 112 & 137 \\ 86 & 95 & 30 & 66 \end{bmatrix} \quad 3\times4$$

$$T = \begin{bmatrix} 173 & 100 & 47 & 5 \\ 66 & 107 & 183 & 261 \\ 136 & 188 & 115 & 109 \end{bmatrix}$$


[1 2] − [2 3]
1×2
1×2
[1 2] + [−2 −3]
[−1 −1]

#3 -

$$\begin{bmatrix} 3 & 7 \\ 9 & 1 \end{bmatrix} + X = \begin{bmatrix} 5 & 9 \\ 2 & -6 \end{bmatrix}$$

$$- \begin{bmatrix} 3 & 7 \\ 9 & 1 \end{bmatrix} \quad - \begin{bmatrix} 3 & 7 \\ 9 & 1 \end{bmatrix}$$

$$X = \begin{bmatrix} 2 & 2 \\ -7 & -7 \end{bmatrix}$$

#4 -

$$\begin{bmatrix} a+12 & 2b \\ 23 & d \end{bmatrix} = \begin{bmatrix} 18 & -14 \\ a+c & 3 \end{bmatrix}$$

$a + 12 = 18$

$-12 \quad -12$

$a = 6$

$2b = -14$

$\frac{2b}{2} = \frac{-14}{2}$

$b = -7$

$23 = 6 + c$

$-6 \quad -6$

$c = 17$

$d = 3$

#5 - Scalar Multiplication

Find $4A$

$$A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$$

$$4\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix} = \begin{bmatrix} 4 & 8 \\ 12 & 16 \end{bmatrix}$$