

Tell whether the matrices are equal or not equal. Why or Why not?

1. $\begin{bmatrix} 5 & -1 & 7 \\ 1 & 3 & \end{bmatrix}$ $\begin{bmatrix} 5 \\ -1 \\ 7 \end{bmatrix}$ No
 1×3 3×1

2. $\begin{bmatrix} 1 & 0 & -8 \\ 8 & 0 & 1 \end{bmatrix}$, $\begin{bmatrix} 1 & 0 & -8 \\ 8 & 0 & 1 \end{bmatrix}$ YES
 2×3 2×3

Perform the indicated operation, if possible. If not possible, state the reason.

3. $\begin{bmatrix} 4 & -2 \\ 0 & -6 \end{bmatrix} + \begin{bmatrix} 4 \\ -1 \end{bmatrix}$ Not possible, not same dimensions.
 2×2 2×1 4. $\begin{bmatrix} 7 & -1 & 4 \\ 11 & -9 & 2 \end{bmatrix} + \begin{bmatrix} -3 & 0 & 6 \\ 3 & -2 & 4 \end{bmatrix} = \begin{bmatrix} 4 & -1 & 10 \\ 14 & -11 & 6 \end{bmatrix}$

5. $\begin{bmatrix} \frac{1}{2} & \frac{1}{4} \\ 2 & 4 \\ 3 & \frac{8}{2} \end{bmatrix} - \begin{bmatrix} 2 & \frac{3}{4} \\ \frac{1}{2} & 5 \end{bmatrix} = \begin{bmatrix} -1\frac{1}{2} & -\frac{1}{2} \\ 2\frac{1}{2} & -1 \end{bmatrix}$

6. $\begin{bmatrix} 1 & 5 \\ 5 & -1 \\ 2 & 8 \end{bmatrix} - \begin{bmatrix} 7 & 3 & 6 \\ -9 & -2 & 7 \\ 10 & 1 & -4 \end{bmatrix}$ Not possible, not same dimensions

7. $-5[1 \ -2 \ 2] = [-5, 10 \ -10]$

8. $5 \begin{bmatrix} 5 & 1 \\ 1 & -2 \\ 1 & 2 \end{bmatrix} = \begin{bmatrix} 25 & 5 \\ 5 & -10 \\ 5 & 10 \end{bmatrix}$

9. $2 \begin{bmatrix} 7 & -8 \\ -1 & 2 \end{bmatrix} + 4 \begin{bmatrix} 2 & -3 \\ -4 & 5 \end{bmatrix}$
 $\begin{bmatrix} 14 & -16 \\ -2 & 4 \end{bmatrix} + \begin{bmatrix} 8 & -12 \\ -16 & 20 \end{bmatrix}$
 $\begin{bmatrix} 22 & -28 \\ -18 & 24 \end{bmatrix}$

10. $\begin{bmatrix} -6 & -10 & 2 \\ 3 & -7 & -4 \end{bmatrix} - 2 \begin{bmatrix} 4 & -1 & -3 \\ -7 & 5 & 5 \end{bmatrix}$
 $- \begin{bmatrix} 8 & -2 & -6 \\ -14 & 10 & 10 \end{bmatrix}$
 $\begin{bmatrix} -14 & -8 & 8 \\ 17 & -17 & -14 \end{bmatrix}$

Solve the matrix equation for x and y.

11. $2x \begin{bmatrix} -3 & 4 \\ -11 & 5 \end{bmatrix} = \begin{bmatrix} 12 & -16 \\ y & -20 \end{bmatrix}$
 $\begin{bmatrix} -6x & 8x \\ -22x & 10x \end{bmatrix} = \begin{bmatrix} 12 & -16 \\ y & -20 \end{bmatrix}$
 $-6x = 12$ $-22x = y$
 $x = -2$ $-22(-2) = y$
 $44 = y$

12. $\begin{bmatrix} 3x & -2 \\ -1 & 8 \end{bmatrix} + \begin{bmatrix} -4 & 0 \\ -7 & -8 \end{bmatrix} = \begin{bmatrix} -16 & -2 \\ y & 0 \end{bmatrix}$
 $\begin{bmatrix} 3x-4 & -2 \\ -8 & 0 \end{bmatrix} = \begin{bmatrix} -16 & -2 \\ y & 0 \end{bmatrix}$
 $3x-4 = -16$
 $3x = -12$
 $x = -4$
 $y = 0$

13. $\begin{bmatrix} -2x & -8 \\ -10 & -9 \end{bmatrix} = \begin{bmatrix} 6 & y \\ -10 & -9 \end{bmatrix}$
 $-2x = 6$
 $x = -3$ $y = -8$

14. $\begin{bmatrix} -3 & -7 & 2 \\ 4 & 8 & 1 \end{bmatrix} + \begin{bmatrix} x & 7 & -9 \\ -5 & -7 & 4 \end{bmatrix} = \begin{bmatrix} -8 & 0 & -7 \\ -1 & y & 5 \end{bmatrix}$
 $\begin{bmatrix} -3+x & 0 & -7 \\ -1 & 1 & 5 \end{bmatrix} = \begin{bmatrix} -8 & 0 & -7 \\ -1 & y & 5 \end{bmatrix}$
 $-3+x = -8$
 $x = -5$ $y = 1$

15. What is the Additive Inverse of $\begin{bmatrix} 3 & -2 & 4 \\ 5 & -1 & 3 \\ -2 & -3 & 0 \end{bmatrix}$?
 $\begin{bmatrix} -3 & 2 & -4 \\ -5 & 1 & -3 \\ 2 & 3 & 0 \end{bmatrix}$

16. What is the Additive Identity of $\begin{bmatrix} 3 & 1 \\ 10 & -3 \end{bmatrix}$?
 $\begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix}$

17. $\begin{bmatrix} 4 & 7 & -2 \\ 1 & 3 & 5 \\ -2 & 6 & -3 \end{bmatrix}$
 A) Additive Inverse? $\begin{bmatrix} -4 & -7 & 2 \\ -1 & -3 & -5 \\ 2 & -6 & 3 \end{bmatrix}$

B) Additive Identity? $\begin{bmatrix} 0 & 0 & 0 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \end{bmatrix}$