

You may use a graphing calculator!

Given the following matrices, simplify the expressions, using fractions instead of decimals.

$$A = \begin{bmatrix} -3 & 2 \\ 0 & 5 \end{bmatrix} \quad B = \begin{bmatrix} 2 & -3 \\ 4 & -1 \end{bmatrix} \quad C = \begin{bmatrix} 6 & -4 \\ 3 & -2 \end{bmatrix} \quad D = \begin{bmatrix} -1 & 4 & 0 \\ 3 & -5 & 2 \\ -4 & 3 & -2 \end{bmatrix} \quad E = \begin{bmatrix} 1 & 6 & -3 \\ 2 & -4 & -1 \end{bmatrix}$$

1. $3(A - C)$
2. $|D|$
3. $-\frac{1}{2}(ED)$
4. C^{-1}
5. B^2
6. D^{-1}
7. $|B|$
8. $2A - 3B + C$

9. Solve for each variable: $2 \begin{bmatrix} 4+3y & 1 \\ -5 & x \end{bmatrix} + \begin{bmatrix} 1 & 6-5z \\ 2 & 4 \end{bmatrix} = \begin{bmatrix} y-3 & 3 \\ -8 & -2 \end{bmatrix}$

10. Solve for x: $\begin{vmatrix} x & -3 \\ 4 & 2 \end{vmatrix} = 6 - 3x$

11. Solve for x: $\begin{vmatrix} 4 & 2 & -1 \\ x & x & 0 \\ 2 & -3 & 5 \end{vmatrix} = 15$

Write each system as a matrix equation and then solve using your graphing calculator.

12. $\begin{cases} x + y = -6 \\ 2x = y + 2 \end{cases}$

13. $\begin{cases} 4x - 2y = 6 \\ 7x = 15 - y \end{cases}$

14. $\begin{cases} 3a + b + 2c = 6 \\ 6a - 2b = 2 \\ 3a + b - 2c = 0 \end{cases}$

15. Before the 1998 All-Star Game, the Atlanta Braves had 59 wins and 29 losses, the Seattle Mariners had 37 wins and 51 losses, the Chicago Cubs (Mrs. Fuston's favorite!) had 48 wins and 39 losses. Use ONE matrix to organize the information. Label the rows and columns of the matrix.

16. Fill in the table with the appropriate dimensions:

First Matrix (A)	Second Matrix (B)	Product (AB) Matrix
3 x 4	4 x 5	3 x 5
5 x 3	5 x 3	ϕ
5 x 4	4 x 1	5 x 1
8 x 5	5 x 3	8 x 3

Review 2

1. $\begin{bmatrix} -27 & 18 \\ -9 & 21 \end{bmatrix}$

2. -12

3. $\begin{bmatrix} -29/2 & 35/2 & -9 \\ 5 & -25/2 & 3 \end{bmatrix}$

4. \emptyset

5. $\begin{bmatrix} -8 & -3 \\ 4 & -11 \end{bmatrix}$

6. $\begin{bmatrix} -1/2 & -2/3 & -2/3 \\ 1/4 & -1/6 & -1/6 \\ 11/12 & 13/12 & -1/12 \end{bmatrix}$

7. 10

8. $\begin{bmatrix} -6 & 9 \\ -9 & 11 \end{bmatrix}$

9. $2 \begin{bmatrix} 4+3y & 1 \\ -5 & x \end{bmatrix} + \begin{bmatrix} 1 & 6-5z \\ 2 & 4 \end{bmatrix} = \begin{bmatrix} y-3 & 3 \\ -8 & -2 \end{bmatrix}$

$$\begin{bmatrix} 8+6y & 2 \\ -10 & 2x \end{bmatrix} + \begin{bmatrix} 1 & 6-5z \\ 2 & 4 \end{bmatrix} = \begin{bmatrix} y-3 & 3 \\ -8 & -2 \end{bmatrix}$$

$$\begin{bmatrix} 9+6y & 8-5z \\ -8 & 2x+4 \end{bmatrix} = \begin{bmatrix} y-3 & 3 \\ -8 & -2 \end{bmatrix}$$

$$9+6y = y-3$$

$$5y = -12$$

$$\boxed{y = -12/5}$$

$$8-5z = 3$$

$$-5z = -5$$

$$\boxed{z = 1}$$

$$2x+4 = -2$$

$$2x = -6$$

$$\boxed{x = -3}$$

10. $2x - 12 = 6 - 3x$
 $2x + 12 = 6 - 3x$
 $5x = -6$
 $x = -\frac{6}{5}$

11.
$$\begin{array}{ccc|cc} 4 & 2 & -1 & 4 & 2 \\ x & x & 0 & x & x \\ 2 & -3 & 5 & 2 & -3 \end{array} = 15$$

$(20x + 0 + 3x) - (-2x + 0 + 10x) = 15$
 $23x - 8x = 15$
 $15x = 15$
 $x = 1$

12. $x + y = -6$
 $2x - y = 2$ $\begin{bmatrix} 1 & 1 \\ 2 & -1 \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} -6 \\ 2 \end{bmatrix}$ $\left(-\frac{4}{3}, -\frac{14}{3}\right)$

13. $4x - 2y = 6$
 $7x + y = 15$ $\begin{bmatrix} 4 & -2 \\ 7 & 1 \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 6 \\ 15 \end{bmatrix}$ $(2, 1)$

14. $\begin{bmatrix} 3 & 1 & 2 \\ 6 & -2 & 0 \\ 3 & 1 & -2 \end{bmatrix} \begin{bmatrix} a \\ b \\ c \end{bmatrix} = \begin{bmatrix} 6 \\ 2 \\ 0 \end{bmatrix}$ $\left(\frac{2}{3}, 1, \frac{3}{2}\right)$

15.

	W	L
AB	59	29
SM	37	51
CC	48	39