

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.  $|B|$
7.  $2A - 3B + C$

8. Evaluate by expansion by minors.

$$\begin{vmatrix} 3 & 4 & -1 \\ -2 & 3 & 0 \\ 1 & 2 & 0 \end{vmatrix}$$

9. Solve.

$$\begin{vmatrix} 5 & 7x \\ -x & -6 \end{vmatrix} = -2$$

10. Solve for x and y.  $2 \begin{bmatrix} x+2 \\ y-3 \end{bmatrix} + \begin{bmatrix} 5 \\ -4 \end{bmatrix} = \begin{bmatrix} 7 \\ 1 \end{bmatrix}$

11. Solve using a matrix equation.

$$\begin{aligned} 2x + 4y &= -5 \\ 3x - 7y &= 4 \end{aligned}$$

12. Solve for x and y.

$$\begin{bmatrix} x & -7 \\ 3 & y \end{bmatrix} \begin{bmatrix} 2 \\ 5 \end{bmatrix} = \begin{bmatrix} 10 \\ 1 \end{bmatrix}$$

13. Multiply:  $\begin{bmatrix} 3 & -1 \\ 0 & 2 \end{bmatrix} \begin{bmatrix} 1 & 6 \\ 2 & -1 \end{bmatrix}$

14. Multiply:  $\begin{bmatrix} 1 & 5 & -4 \\ 6 & 0 & -1 \end{bmatrix} \begin{bmatrix} 2 & -1 \\ 3 & -3 \\ 1 & 1 \end{bmatrix}$

15. Find the inverse of

a)  $\begin{bmatrix} 3 & -4 \\ 4 & -2 \end{bmatrix}$

b)  $\begin{bmatrix} 2 & 4 \\ -6 & -12 \end{bmatrix}$

16. You can only find the inverse of a \_\_\_\_\_ matrix.

17. If  $A_{2 \times 3} \cdot B_{3 \times 1} = C$  find the dimensions of C. \_\_\_\_\_

Word Problems. (a) define the variable. (b) write the system of equations  
(c) write the matrix representation of the system (d) write your answer in a complete sentence.

18. The perimeter of a rectangular picture is 86 inches. Twice the width exceeds the length by 2 inches. What are the dimensions of the picture?

19. Mrs. Mardis buys 2 granola bars and 3 coffee's for \$21.83. Mrs. Doyle buys 5 granola bars and 1 coffee for \$15.90. How much does one granola bar and one coffee cost?

20. Your team goes to eat at a restaurant. There are 26 people eating dinner. Some team members order the buffet for \$12.99 and some order the grilled steak meal for \$15.95. Coach got the bill. It was \$364.38. How many people ordered the buffet?

21. Ramona spent \$17.00 on two different types of lollipops for Spring Fling prizes. Some cost \$0.50 and some cost \$0.35. If she bought a total of 40 lollipops, how many of each kind did she buy?

22. Flourish and Blotts store sells books. Some cost \$6.00 and some cost \$7.00. On Wednesday, Flourish and Blotts sold 27 books for \$177.00. How many of each did they sell?

23. At a spring concert, tickets for adults cost \$4.00 and tickets for students cost \$2.50. How many of each kind of ticket were purchased if 125 tickets were bought for \$413.00?