# Algebra 2 Cumulative Assessment #2  Review

**Work the problem as indicated.**

$$A = \begin{bmatrix} -4 & 2 & 0 \\ 3 & -1 & -6 \end{bmatrix}, \quad B = \begin{bmatrix} 2 & 5 \\ -2 & -3 \\ 0 & 4 \end{bmatrix}, \quad C = \begin{bmatrix} 1 & 0 \\ -1 & 4 \end{bmatrix}, \quad D = \begin{bmatrix} -5 & 2 & 2 \\ 4 & 8 & -3 \\ 1 & 0 & 5 \end{bmatrix}, \quad E = \begin{bmatrix} 7 & -9 \\ 2 & -3 \end{bmatrix}$$

1. AB + C

2. D – BA

3. C²

4. AB + E

5. C⁻¹

6. D⁻¹

7. If A is a 4 × 4 matrix, B is a 4 × 3 matrix, and C is a 3 × 3 matrix, what are the dimensions of A × B × C?  of  B x A x C?

8. Find the value of x so that the given matrix has a determinant of 24.

$$\begin{vmatrix} -4 & -2 & -1 \\ -3 & x & -3 \\ -3 & -5 & 0 \end{vmatrix}$$    A. -3        B. -2        C. -1        D. 1

9. Solve the system.
$$\begin{cases} -7x - 7y = 7 \\ 10x + 4y = 20 \end{cases}$$

10. Solve the system:
$$\begin{cases} -4x + 10y = 10 \\ 3x - 8y = -6 \end{cases}$$

11. Solve the system.
$$\begin{cases} x - 3y + 2z = 10 \\ 5x - 6y + 3z = 10 \\ 3x + y + z = -20 \end{cases}$$

12. Solve the system:
$$\begin{cases} -2x + 6y + 6z = -2 \\ x - 2y - 2z = 0 \\ x - 5y + 3z = 3 \end{cases}$$

13. A used bookstore sells paperback books for $2.00 each, hardback books for $4.00 each, and CDs for $5 each.  On Saturday, they sold 47 paperbacks, 62 hardbacks, and 52 CDs,  what matrix operation would compute the store's total income for that day?

14. What is the matrix product $\begin{bmatrix} x \\ 2x \\ 3x \end{bmatrix} \begin{bmatrix} 2 & 0 & -2 \end{bmatrix}$?

15. Find the values of x and y for this matrix equation:

$$\begin{bmatrix} 4 & x & 8 \\ 3 & 9 & 5 \end{bmatrix} \begin{bmatrix} 2 & 4 \\ 7 & 5 \\ y & 7 \end{bmatrix} = \begin{bmatrix} 69 & 62 \\ 74 & 47 \end{bmatrix}$$

16. By definition, the determinant $\begin{vmatrix} a & b \\ c & d \end{vmatrix}$ equals ad – bc.

What is the value of $\begin{vmatrix} 2x & 3y \\ 5x & 4y \end{vmatrix}$ when x = 4 and y = -3?

17. The angelfish, goldfish, and guppies are kept in the same tank at the pet store.  There are 3 times as many goldfish as guppies, and 9 times more angelfish than guppies.  In total, there are 26 fish in the tank.  How many guppies are in the tank?

18. The sum of three numbers is 147.  The first number is 17 less than the second number.  The third number is 9 more than the first and second numbers combined.  What are the numbers?

19. What is the rule for the $n^{th}$ term of the arithmetic sequence with $a_{10}$ = 32 and common difference d = 4?

20. What is the solution set for the equation $6 - (-5x + 3) = |8x + 7|$?