Algebra 2—H Chapter 4 Review HW #_____ HW #_____

DO ALL WORK <u>NEATLY</u> ON YOUR OWN PAPER.

Perform the indicated operations.

1. $3\left(\begin{bmatrix}1 & 0\\ 2 & 1\end{bmatrix}+\begin{bmatrix}4 & 2\\ 0 & 3\end{bmatrix}\right)-\begin{bmatrix}1 & 1\\ -3 & 2\end{bmatrix}$

2. $\begin{bmatrix}10 & 4 & 6\\ 5 & 6 & 8\\ -2 & 7 & -1\end{bmatrix}\begin{bmatrix}3 & 5\\ 0 & -4\\ -1 & 0\end{bmatrix}$

3. $\begin{bmatrix}1 & 3\\ -2 & 0\end{bmatrix}\begin{bmatrix}5 & 2\\ 1 & -1\end{bmatrix}+\begin{bmatrix}-1\\ -2\end{bmatrix}\begin{bmatrix}2 & -3\end{bmatrix}$

Solve for x and y.

4. $-3\begin{bmatrix}x+2\\ y-3\end{bmatrix}=\frac{1}{2}\begin{bmatrix}10\\ 6\end{bmatrix}$

5. $\begin{bmatrix}x+y & -5\\ 0 & x-2y\end{bmatrix}=\begin{bmatrix}7 & -5\\ 0 & 1\end{bmatrix}$

6. Solve the system $\begin{aligned}3x-2y&=-12\\ 5x+6y&=19\end{aligned}$ for both variables using only Cramer's Rule.

7. Write a system of equations and solve for at least one variable by Cramer's Rule.
The sum of the length, width, and height of a box is 80 cm. The length is 10 cm shorter than twice the sum of the width and height. Twice the width exceeds the height by 6 cm. Find the length, width, and height of the box.

8. Find and simplify the inverse of the matrix $\begin{bmatrix}2 & -3\\ -1 & 8\end{bmatrix}$.

Solve for matrix X.

9. $2X+3\begin{bmatrix}0 & 2\\ -4 & 3\end{bmatrix}=\begin{bmatrix}8 & 10\\ 15 & -7\end{bmatrix}$

10. $\begin{bmatrix}7 & 6\\ 6 & 5\end{bmatrix}X=\begin{bmatrix}1 & 0 & -2\\ 3 & 1 & 4\end{bmatrix}$

11. Write a matrix equation and use an inverse matrix to solve the system $\begin{aligned}5x-3y&=21\\ 2x+7y&=-8\end{aligned}$.

12. The inverse of the coefficient matrix of the system is given. Use the inverse to solve the system.

$$\begin{aligned}w+6x+3y-3z&=2\\ 2w+7x+y+2z&=5\\ w+5x+3y-3z&=3\\ -6x-2y+3z&=6\end{aligned}$$

$$A^{-1}=\begin{bmatrix}40 & -3 & -33 & 9\\ 1 & 0 & -1 & 0\\ -39 & 3 & 33 & -8\\ -24 & 2 & 30 & -5\end{bmatrix}$$

13. Use a determinant to find the area of triangle ABC with vertices A (-3, -1), B (2, 0) and C (2, -4).

14. Solve the determinant for x. $\begin{vmatrix} 2 & 3 & -2 \\ 1 & x & 3 \\ x & 0 & 1 \end{vmatrix} = -8$

15. Expand by minors about column 2. $\begin{vmatrix} -1 & 3 & -4 \\ 0 & -1 & 5 \\ 1 & 2 & 0 \end{vmatrix}$

Evaluate each determinant. 16. $\begin{vmatrix} 2 & 5 & 3 \\ 0 & -8 & 1 \\ -5 & -4 & 0 \end{vmatrix}$ 17. $\begin{vmatrix} -2 & 3 & 0 & 4 \\ -4 & 1 & 3 & 3 \\ 2 & -1 & 3 & -2 \\ 0 & 1 & 3 & 0 \end{vmatrix}$

18. Matrix T shows the type and number of tennis rackets produced by a sporting goods company. Matrix H shows the labor hours required, per racket, for assembly and lamination. Find the product TH and correctly label the matrix. What is the total number of lamination hours required?

	STANDARD	DELUXE
T=	120	15

	ASSEMBLY	LAMINATION	
H =	4	.8	STANDARD
	6	1.0	DELUXE

19. Solve for x and y. $\frac{4}{x} + \frac{3}{y} = 7$, $\frac{5}{x} + \frac{2}{y} = 0$

20. Evaluate $\frac{2x^3 - 3xy}{x - 2y}$ if x = -3 and y = -2.

21. Find a and b so that $y = ax^2 + bx$ contains the points (-1, 5) and (-2, 14).

****

Answers: 1. $\begin{bmatrix} 14 & 5 \\ 9 & 10 \end{bmatrix}$ 2. $\begin{bmatrix} 24 & 34 \\ 7 & 1 \\ -5 & -38 \end{bmatrix}$ 3. $\begin{bmatrix} 6 & 2 \\ -14 & 2 \end{bmatrix}$ 4. $x = \frac{-11}{3}$, $y = 2$ 5. $x = 5$, $y = 2$

6. $\left(\frac{-17}{14}, \frac{117}{28} \right)$ 7. length 50 cm, width 12 cm, height 18 cm 8. $\begin{bmatrix} \frac{8}{13} & \frac{3}{13} \\ \frac{1}{13} & \frac{2}{13} \end{bmatrix}$ 9. $\begin{bmatrix} 4 & 2 \\ 13.5 & -8 \end{bmatrix}$

10. $\begin{bmatrix} 13 & 6 & 34 \\ -15 & -7 & -40 \end{bmatrix}$ 11. (3, -2) 12. (20, -1, -12, 22) 13. 10 sq. units 14. x = -5 or -1/2

15. 21 16. -137 17. -42 18. 111 hours 19. x = -1/2, y = 1/5 20. -72 21. a = 2, b = -3