8th ALL Unit 6 Review: Matrices Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



Perform the given operation with the given matrices.

1. $\left[\begin{matrix}3&4\\5&-1\\2&6\end{matrix}\right]$ + $\left[\begin{matrix}3&4\\5&-1\\2&6\end{matrix}\right]$ 2. $\left[\begin{matrix}-2&0\\4&3\\2&3\end{matrix}\right]- \left[\begin{matrix}2&4&-1\\0&3&5\end{matrix}\right]$ 3. -3$\left[\begin{matrix}1&1\\2&-3\\4&-5\end{matrix}\right]$

K = $\left[\begin{matrix}-3&1\\2&93\\4&-5\end{matrix} \begin{matrix}7&0\\6&-1\\0&1.8\end{matrix}\right]$ 4. Write the additive identity for matrix K:

 5. Write the additive inverse for matrix K:

W = $\left[\begin{matrix}8&-1\\4&0\\0&-5\end{matrix} \begin{matrix}6&-50\\23&0\\21&3\end{matrix}\right]$ 6. Find W – K

7. Find 2K + W

8. What are the dimensions of matrix P?

9. What is element P4,3 ? P = P =

Find the determinants:

10. $\left|\begin{matrix}14&9\\-5&-3\end{matrix}\right|$ 11. $\left|\begin{matrix}15&9\\-5&-3\end{matrix}\right|$ 12. $\left|\begin{matrix}0&4&6\\3&7&1\\-2&0&-8\end{matrix}\right|$

13. Solve for x: $\left|\begin{matrix}-3&4\\x&-9\end{matrix}\right|=32 $

Perform the following multiplications if possible:

14. BA

15. FD

16. EH J = $\left[\begin{matrix}4\\9\end{matrix}\right]$ K = $\left[\begin{matrix}8&0&-3\end{matrix}\right]$

17. JK

18. CJ

19. If M = GH, then find M3,2 without multiplying all of G\*H.

Write an augmented matrix for each system of linear equations:

20. $\left\{\begin{array}{c}x+2y=-4\\5x-y=19\end{array}\right.$ 21. $\left\{\begin{matrix}-3x+2y+z=14\\-5x+48y=-20\\7x-3y-9z=6\end{matrix}\right.$

Write the system of equations that generated each matrix:

22. $\left[\begin{matrix}0&4&-5\\7&-3&8\end{matrix}\right]$ 23. $\left[\begin{matrix}1&2&3\\-4&0&6\\5&-7&1\end{matrix} \begin{matrix}8\\9\\2\end{matrix}\right]$

Stop being afraid of what could go wrong and start being excited about what could go right.

Solve the following systems using matrix row reduction:

24. $\left\{\begin{array}{c}6x+6y=-6\\5x+y=-13\end{array}\right.$

25. $\left\{\begin{array}{c}-2x+6y=6\\-7x+8y=-5\end{array}\right.$

Use the value of the determinant to decide if the system of equations will have one solution. **Do NOT actually solve it**.

26. $\left\{\begin{matrix}6x-8y=57\\-3x+4y= 0\end{matrix}\right.$ 27. $\left\{\begin{matrix}x+3y=-15\\-4x+2y= 6\end{matrix}\right.$ 28. $\left\{\begin{matrix}5x-2y-7z=0\\-x+8y+3z=6\\2y+4z=-10\end{matrix}\right.$

determinant = determinant = determinant =

one solution? yes / no one solution? yes / no one solution? yes / no

Use the above determinants to determine whether the matrices from #26 - #28 have inverses:

29. inverse? yes / no 30. inverse? yes / no 31. inverse? yes / no

32. Write $I\_{2}$ and $I\_{3}$

Use the formula for the inverse of a 2x2 matrix to find the inverse of each matrix:

33. $\left[\begin{matrix}6&8\\-4&-2\end{matrix}\right]$ 34. $\left[\begin{matrix}4&-2\\-2&1\end{matrix}\right]$ 35. $\left[\begin{matrix}-2&5\\3&-7\end{matrix}\right]$

36. Use augmented matrices and row operations to find the inverse of $\left[\begin{matrix}1&2\\3&4\end{matrix}\right]$:

37. Use the inverse you found in #36 to solve this system of equations using inverse matrices: $\left\{\begin{matrix}x+2y=4\\3x+4y=10\end{matrix}\right.$

38. The inverse of matrix M =$\left[\begin{matrix}-7&-11&10\\6&9&-8\\-2&-3&3\end{matrix}\right]$ is M-1 = $\left[\begin{matrix}3&3&-2\\-2&-1&4\\0&1&3\end{matrix}\right]$

Use this information to solve the following system of equations using inverse matrices: $\left\{\begin{matrix}-7x-11y+10z= -4\\6x+9y-8z=18\\-2x-3y+3z=20\end{matrix}\right.$

39. What is the solution to the system represented by this matrix? $\left[\begin{matrix}1&0&3\\8&1&24\end{matrix}\right]$