NAME _____ DATE _____ PERIOD _____

4-7 Skills Practice

Identity and Inverse Matrices

Determine whether each pair of matrices are inverses.

1. $X = \begin{bmatrix} 1 & 0 \\ 1 & 1 \end{bmatrix}, Y = \begin{bmatrix} 1 & 0 \\ -1 & 1 \end{bmatrix} = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ Yes

2. $P = \begin{bmatrix} 2 & 3 \\ 1 & 1 \end{bmatrix}, Q = \begin{bmatrix} -1 & 3 \\ 1 & -2 \end{bmatrix}$ Yes $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$

3. $M = \begin{bmatrix} -1 & 0 \\ 0 & 3 \end{bmatrix}, N = \begin{bmatrix} -1 & 0 \\ 0 & -3 \end{bmatrix} = \begin{bmatrix} 1 & 0 \\ 0 & -9 \end{bmatrix}$ No

4. $A = \begin{bmatrix} -2 & 5 \\ -1 & 2 \end{bmatrix}, B = \begin{bmatrix} 2 & -5 \\ 1 & -2 \end{bmatrix}$ Yes $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$

5. $V = \begin{bmatrix} 0 & 7 \\ -7 & 0 \end{bmatrix}, W = \begin{bmatrix} 0 & -\frac{1}{7} \\ \frac{1}{7} & 0 \end{bmatrix} = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ Yes

6. $X = \begin{bmatrix} -1 & 4 \\ 1 & 2 \end{bmatrix}, Y = \begin{bmatrix} -\frac{1}{3} & \frac{2}{3} \\ \frac{1}{6} & \frac{1}{6} \end{bmatrix}$ Yes $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$

7. $G = \begin{bmatrix} 4 & -3 \\ 1 & 2 \end{bmatrix}, H = \begin{bmatrix} \frac{2}{11} & \frac{3}{11} \\ -\frac{1}{11} & \frac{4}{11} \end{bmatrix} = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ Yes

8. $D = \begin{bmatrix} -4 & -4 \\ -4 & 4 \end{bmatrix}, E = \begin{bmatrix} -0.125 & -0.125 \\ -0.125 & -0.125 \end{bmatrix}$ No $\begin{bmatrix} 1 & 1 \\ \end{bmatrix}$

$\frac{1}{8}$

Find the inverse of each matrix, if it exists.

9. $\begin{bmatrix} 0 & 2 \\ 4 & 0 \end{bmatrix}$ $\frac{1}{0-8} = \frac{1}{-8}\begin{bmatrix} 0 & -2 \\ -4 & 0 \end{bmatrix}$

10. $\begin{bmatrix} 1 & 1 \\ 3 & 2 \end{bmatrix}$ $= \frac{1}{2-3} = -1\begin{bmatrix} 2 & -1 \\ -3 & 1 \end{bmatrix}$

11. $\begin{bmatrix} 9 & 3 \\ 6 & 2 \end{bmatrix}$ $\frac{1}{18-18}$ $\emptyset$

12. $\begin{bmatrix} -2 & -4 \\ 6 & 0 \end{bmatrix}$ $\frac{1}{0+24} = \frac{1}{24}\begin{bmatrix} 0 & 4 \\ -6 & -2 \end{bmatrix}$

13. $\begin{bmatrix} 1 & -1 \\ 3 & 3 \end{bmatrix}$ $\frac{1}{3-3} = \frac{1}{6}\begin{bmatrix} 3 & 1 \\ -3 & 1 \end{bmatrix}$

14. $\begin{bmatrix} 3 & 6 \\ -1 & -2 \end{bmatrix}$ $\frac{1}{-6+6} = \frac{1}{0}$ $\emptyset$

15. $\begin{bmatrix} -1 & -1 \\ 1 & -1 \end{bmatrix}$ $\frac{1}{1+1} = \frac{1}{2}\begin{bmatrix} -1 & 1 \\ -1 & -1 \end{bmatrix}$

16. $\begin{bmatrix} -4 & 5 \\ 1 & 2 \end{bmatrix}$ $\frac{1}{-8-5} = \frac{-1}{13}\begin{bmatrix} 2 & -5 \\ -1 & -4 \end{bmatrix}$

17. $\begin{bmatrix} 0 & -7 \\ -7 & 0 \end{bmatrix}$ $\frac{1}{0-49} = \frac{1}{-49}\begin{bmatrix} 0 & 7 \\ 7 & 0 \end{bmatrix}$

18. $\begin{bmatrix} 10 & 8 \\ 5 & 4 \end{bmatrix}$ $\frac{1}{40-40} = \frac{1}{0}$ $\emptyset$

19. $\begin{bmatrix} 10 & 8 \\ 10 & -8 \end{bmatrix}$ $\frac{1}{-80-80} = \frac{1}{-160}\begin{bmatrix} -8 & -8 \\ -10 & 10 \end{bmatrix}$

20. $\begin{bmatrix} 2 & 0 \\ 0 & 2 \end{bmatrix}$ $\frac{1}{4}\begin{bmatrix} 2 & 0 \\ 0 & 2 \end{bmatrix}$

Lesson 4-7