

Unit 9 Test Review

I. Perform the given operations using the following matrices.

$$1. \begin{bmatrix} 2 \\ -7 \\ 3 \end{bmatrix} + \begin{bmatrix} -5 \\ 4 \\ 6 \end{bmatrix} =$$

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

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

$$3. A + B =$$

$$4. A - B =$$

$$5. C + D =$$

$$6. C - D =$$

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

7. $-3B =$

8. $2A =$

9. $-A =$

10. $4D =$

II. State the dimensions of each matrix.

11. $\begin{bmatrix} 5 & 8 & -7 \\ 1 & 11 & 3 \end{bmatrix}$ _____ X _____

12. $\begin{bmatrix} 3 & 1 \\ -5 & 0 \\ 7 & 6 \end{bmatrix}$ _____ X _____

III. Solve for each variable.

$$13. \begin{bmatrix} x - 5 & 9 \\ 4 & t + 2 \end{bmatrix} = \begin{bmatrix} -7 & w + 1 \\ 8 - r & 1 \end{bmatrix}$$

$$14. \begin{bmatrix} -4 + t & 2y \\ r & w + 4 \end{bmatrix} = \begin{bmatrix} 2t & 12 \\ -2r + 12 & 9 \end{bmatrix}$$

IV. Word Problems

15. A corporation has three factories, each of which manufactures four products.

	A	B	C	D
Factory 1	30	80	70	20
Factory 2	50	100	90	90
Factory 3	60	70	80	100

Find the production levels if production is decreased by half.

16. A corporation has three factories, each of which manufactures four products.

	A	B	C	D
Factory 1	30	80	70	20
Factory 2	50	100	90	90
Factory 3	60	70	80	100

Find the production levels if production is doubled.

V. Simplify each radical.

17. $\sqrt{50x^4}$

18. $2\sqrt{96}$

19. $\sqrt{704x^3y^3}$

20. $5\sqrt{1025}$

21. $\sqrt{529}$

22. $-3\sqrt{60}$

23. $5\sqrt{98}$

24. $\sqrt{75xy^6}$

ANSWERS

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$$\begin{bmatrix} 16 & 4 \\ -12 & 0 \end{bmatrix}$$

$$\begin{bmatrix} 60 & 160 & 140 & 40 \\ 100 & 200 & 180 & 180 \\ 120 & 140 & 160 & 200 \end{bmatrix}$$

2×3

8

$$8\sqrt{6}$$

$$\begin{bmatrix} 7 & 0 \\ -3 & 5 \end{bmatrix}$$

3×2

$$5x^2\sqrt{2}$$

$$-6\sqrt{15}$$

4

-1

5

$$8xy\sqrt{11xy}$$

$$25\sqrt{41}$$

$$\begin{bmatrix} -3 \\ -3 \\ 9 \end{bmatrix}$$

$$35\sqrt{2}$$

6

23

-4

$$\begin{bmatrix} -2 & -9 \\ 6 & -3 \\ 2 & 1 \end{bmatrix}$$

$$5y^3\sqrt{3x}$$

$$\begin{bmatrix} -2 & 1 \\ 2 & -13 \\ 0 & 3 \end{bmatrix}$$

$$\begin{bmatrix} -1 & 13 \\ -11 & 1 \\ 5 & -2 \end{bmatrix}$$

-2

$$\begin{bmatrix} -9 & 12 \\ -15 & -6 \\ 21 & -3 \end{bmatrix}$$

$$\begin{bmatrix} 4 & 18 \\ -12 & 6 \\ -4 & -2 \end{bmatrix}$$

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

$$\begin{bmatrix} 15 & 40 & 35 & 10 \\ 25 & 50 & 45 & 45 \\ 30 & 35 & 40 & 50 \end{bmatrix}$$

$$\begin{bmatrix} 5 & 5 \\ -1 & 5 \\ -9 & 0 \end{bmatrix}$$