

pg. 166 # 1-11, pg. 174 # 2-10e, 16, 17, 24
pg. 182 # 2, 5, 9, 11, 14, 18, 20-29

- pg. 166 1. 3 rows top to bottom
3 columns left to right
3x3
6. second row, first column
1.5

$$\text{pg. 174 2. } \begin{bmatrix} 2 & -3 & 4 \\ 5 & 6 & -7 \end{bmatrix} + \begin{bmatrix} 0 & 0 & 0 \\ 0 & 0 & 0 \end{bmatrix} = \begin{bmatrix} 2+0 & -3+0 & 4+0 \\ 5+0 & 6+0 & -7+0 \end{bmatrix}$$
$$= \begin{bmatrix} 2 & -3 & 4 \\ 5 & 6 & -7 \end{bmatrix}$$

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

$$X = \begin{bmatrix} 4 & -8 \\ -1 & -1 \\ 11 & 1 \end{bmatrix}$$

$$16. \begin{bmatrix} 2 & 2 \\ -1 & 6 \end{bmatrix} - \begin{bmatrix} 4 & -1 \\ 0 & 5 \end{bmatrix} = \begin{bmatrix} x & y \\ -1 & z \end{bmatrix}$$

$$2 - 4 = x$$
$$-2 = x$$

$$2 - (-1) = y$$
$$3 = y$$

$$6 - 5 = z$$
$$1 = z$$

2. pg. 182

$$\frac{1}{4} \begin{bmatrix} -3 & 1 \\ 2 & -4 \\ -1 & 5 \end{bmatrix} = \begin{bmatrix} -12 & 4 \\ 8 & -16 \\ -4 & 20 \end{bmatrix}$$

9.

$$3 \begin{bmatrix} 2 & 0 \\ -1 & 5 \end{bmatrix} - 2X = \begin{bmatrix} -10 & 5 \\ 0 & 17 \end{bmatrix}$$

$$\begin{bmatrix} 6 & 0 \\ -3 & 15 \end{bmatrix} - 2X = \begin{bmatrix} -10 & 5 \\ 0 & 17 \end{bmatrix}$$

$$-\begin{bmatrix} 6 & 0 \\ -3 & 15 \end{bmatrix} + \begin{bmatrix} -6 & 0 \\ 3 & -15 \end{bmatrix}$$

$$\begin{bmatrix} -12 & 0 \\ 3 & 0 \end{bmatrix} - 2X = \begin{bmatrix} -16 & 5 \\ 3 & 2 \end{bmatrix} \quad (-1/2)$$

$$X = \begin{bmatrix} 8 & -5/2 \\ -3/2 & -1 \end{bmatrix}$$

11.

$$\begin{bmatrix} -3 & 4 \\ 5 & 2 \end{bmatrix} \begin{bmatrix} 1 & 0 \\ 2 & -3 \end{bmatrix} = \begin{bmatrix} -3(1) = -3 \\ +4(2) = +8 \\ \hline 5 \end{bmatrix} \quad \begin{bmatrix} -3(0) = 0 \\ +4(-3) = -12 \\ \hline -12 \end{bmatrix}$$

$$\begin{bmatrix} 5(1) = 5 \\ +2(2) = 4 \\ \hline 9 \end{bmatrix} \quad \begin{bmatrix} 5(0) = 0 \\ +2(-3) = -6 \\ \hline -6 \end{bmatrix}$$

$$= \begin{bmatrix} 5 & -12 \\ 9 & -6 \end{bmatrix}$$

20. FG F is 2x2 G is 2x2
same

FG is defined

Answers for Lesson 4-1, pp. 166–169 Exercises

- ①. 3×3 ②. 3×1 ③. 1×2
 ④. 2×3 ⑤. 4×1 ⑥. 1.5
 ⑦. -3 ⑧. 7 ⑨. $\frac{1}{2}$
 ⑩. -2 ⑪. -1

12.

	Novels	Biogr.	Sci-Fi.	Non-fiction
Week 1	175	100	93	100
Week 2	154	93	81	104
Week 3	201	110	114	103
Week 4	180	92	100	110

13.

	Week 1	Week 2	Week 3	Week 4
Novels	175	154	201	180
Biogr.	100	93	110	92
Sci-Fi.	93	81	114	100
Nonfiction	100	104	103	110

14. a.

	Videodisc Players	Modems	Networks	CD- ROMs
Elementary	25.9	35.1	26.4	37.9
$H =$ Junior High	9.2	11.0	9.0	11.0
Senior High	10.7	14.5	12.9	14.0

b. 9.0; millions of networks in the junior high schools

15.

	1980	1985	1990	1992	1995	1997
Color TVs	63	78	90	91	94	97
VCRs	1	18	63	69	77	82

63, which represents 63 million U.S. households that had VCRs in 1990

Answers for Lesson 4-2, pp. 174–176 Exercises

1. a.	Emily deRiel	Mary Beth Iagorashvili
	Shoot	Shoot
	Fence	Fence
	Swim	Swim
	Ride	Ride
	Run	Run

b. Total Score

Shoot	2120
Fence	1760
Swim	2387
Ride	2110
Run	2062

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

3. $\begin{bmatrix} 1 & 3 \\ 4 & 0 \end{bmatrix}$

4. $\begin{bmatrix} 3.9 & -2.3 \\ -0.6 & 9.1 \end{bmatrix}$

5. $\begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix}$

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

7. $\begin{bmatrix} 0 & -2 & 0 \\ -2 & 0 & -2 \end{bmatrix}$

8. $\begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix}$

9. $\begin{bmatrix} -6.8 & 1.3 \\ -2.1 & -1 \end{bmatrix}$

10. $\begin{bmatrix} 4 & -8 \\ -1 & -1 \\ 11 & 1 \end{bmatrix}$

11. $\begin{bmatrix} -9 & -2 & 12 \\ -15 & 11 & -7 \end{bmatrix}$

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

13. $\begin{bmatrix} -4 & -1 \\ -1 & -2 \end{bmatrix}$

14. Yes; $-2 = 2(-1)$, $3 = 2(1.5)$, $5 = 2(2.5)$, and $0 = 2(0)$ are all correct.

15. No; the matrices have different dimensions.

16. $x = -2, y = 3, z = 1$

17. $x = 2, t = \frac{3}{5}$

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24. $\begin{bmatrix} 4 & -1 & 11 \\ -8 & -1 & 2 \end{bmatrix}$

Answers for Lesson 4-3, pp. 182-185 Exercises

1. $\begin{bmatrix} 9 & 12 \\ 18 & -6 \\ 3 & 0 \end{bmatrix}$

2. $\begin{bmatrix} -12 & 4 \\ 8 & -16 \\ -4 & 20 \end{bmatrix}$

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

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

5. $\begin{bmatrix} 9 & 2 \\ 2 & 6 \\ 3 & -10 \end{bmatrix}$

6. $\begin{bmatrix} 3 & 14 \\ 22 & -14 \\ 1 & 10 \end{bmatrix}$

7. $\begin{bmatrix} 19 & 11 \\ -12 & 10 \end{bmatrix}$

8. $\begin{bmatrix} 21 & 3 \\ 2 & 16 \\ 7 & -25 \end{bmatrix}$

9. $\begin{bmatrix} 8 & -2.5 \\ -1.5 & -1 \end{bmatrix}$

10. $\begin{bmatrix} 0.34 & -0.46 \\ -1.18 & 0.9 \end{bmatrix}$

11. $\begin{bmatrix} 5 & -12 \\ 9 & -6 \end{bmatrix}$

12. $\begin{bmatrix} -3 & 4 \\ -21 & 2 \end{bmatrix}$

13. $\begin{bmatrix} -8 & 0 \\ 0 & -8 \end{bmatrix}$

14. $[34]$

15. $[34 \ 0]$

16. $[0 \ 34]$

17. $\begin{bmatrix} -15 & 0 \\ 25 & 0 \end{bmatrix}$

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

19. a.

	Lilies	Carnations	Daisies
Arrangement 1	$\begin{bmatrix} 3 \\ 3 \\ 0 \end{bmatrix}$	$\begin{bmatrix} 0 \\ 4 \\ 3 \end{bmatrix}$	$\begin{bmatrix} 0 \\ 0 \\ 4 \end{bmatrix}$
Arrangement 2			
Arrangement 3			

b.

	Cost
Lilies	$\begin{bmatrix} 2.15 \\ 0.90 \\ 1.30 \end{bmatrix}$
Carnations	
Daisies	

c.

	Cost
Arrangement 1	$\begin{bmatrix} 6.45 \\ 10.05 \\ 7.90 \end{bmatrix}$
Arrangement 2	
Arrangement 3	

defined:

undefined:

20, 21, 22, 24, 27, 28, 29 & 23, 25, 26