GUIDED PRACTICE for Examples 3 and 4

Use Cramer's rule to solve the linear system.

5. $3x - 4y = -15$
$2x + 5y = 13$

6. $4x + 7y = 2$
$-3x - 2y = -8$

7. $3x - 4y + 2z = 18$
$4x + y - 5z = -13$
$2x - 3y + z = 11$

3.7 EXERCISES

HOMEWORK KEY

= **WORKED-OUT SOLUTIONS** on p. WS1 for Exs. 11, 23, and 43

= **TAKS PRACTICE AND REASONING** Exs. 21, 28, 38, 42, 45, 47, and 48

SKILL PRACTICE

1. VOCABULARY Copy and complete: The _?_ of a 2×2 matrix is the difference of the products of the elements on the diagonals.

2. WRITING *Explain* Cramer's rule and how it is used.

EXAMPLE 1 on p. 203 for Exs. 3–21

2 × 2 DETERMINANTS **Evaluate the determinant of the matrix.**

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

7. $\begin{bmatrix} 10 & -6 \\ -7 & 5 \end{bmatrix}$ **8.** $\begin{bmatrix} 0 & 3 \\ 5 & -3 \end{bmatrix}$ **9.** $\begin{bmatrix} 9 & -3 \\ 7 & 2 \end{bmatrix}$ **10.** $\begin{bmatrix} -5 & 12 \\ 4 & 6 \end{bmatrix}$

3 × 3 DETERMINANTS **Evaluate the determinant of the matrix.**

11. $\begin{bmatrix} -1 & 12 & 4 \\ 0 & 2 & -5 \\ 3 & 0 & 1 \end{bmatrix}$ **12.** $\begin{bmatrix} 1 & 2 & 3 \\ 5 & -8 & 1 \\ 2 & 4 & 3 \end{bmatrix}$ **13.** $\begin{bmatrix} 5 & 0 & 2 \\ -3 & 9 & -2 \\ 1 & -4 & 0 \end{bmatrix}$ **14.** $\begin{bmatrix} -7 & 4 & 5 \\ 1 & 2 & -4 \\ -10 & 1 & 6 \end{bmatrix}$

15. $\begin{bmatrix} 12 & 5 & 8 \\ 0 & 6 & -8 \\ 1 & 10 & 4 \end{bmatrix}$ **16.** $\begin{bmatrix} -4 & 3 & -9 \\ 12 & 6 & 0 \\ 8 & -12 & 0 \end{bmatrix}$ **17.** $\begin{bmatrix} -2 & 6 & 0 \\ 8 & 15 & 3 \\ 4 & -1 & 7 \end{bmatrix}$ **18.** $\begin{bmatrix} 5 & 7 & 6 \\ -4 & 0 & 8 \\ 1 & 8 & 7 \end{bmatrix}$

ERROR ANALYSIS ***Describe*** **and correct the error in evaluating the determinant.**

19.

$$\begin{vmatrix} 2 & 0 & -1 & 2 & 0 \\ 4 & 1 & 6 & 4 & 1 \\ -3 & 2 & 5 & -3 & 2 \end{vmatrix}$$

$= 10 + 0 + (-8) + (3 + 24 + 0)$
$= 2 + 27 = 29$

20.

$$\begin{vmatrix} 3 & 0 & 3 & 0 & 1 \\ 2 & 2 & 2 & 2 & -3 \\ -3 & 5 & -3 & 5 & 0 \end{vmatrix}$$

$= -18 + 0 + 0 - (-18 + 0 - 6)$
$= -18 - (-24) = 6$

21. TAKS REASONING Which matrix has the greatest determinant?

(A) $\begin{bmatrix} -4 & 1 \\ 6 & 3 \end{bmatrix}$ (B) $\begin{bmatrix} 1 & 6 \\ 3 & 8 \end{bmatrix}$ (C) $\begin{bmatrix} 5 & -3 \\ 7 & -1 \end{bmatrix}$ (D) $\begin{bmatrix} 5 & -2 \\ 1 & 5 \end{bmatrix}$