Homework 4(b)

3.2 EXERCISES

Find the determinants in Exercises 5–10 by row reduction to echelon form.

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

Find the determinants in Exercises 15–20, where

$$\begin{vmatrix} a & b & c \\ d & e & f \\ g & h & i \end{vmatrix} = 7.$$

15. $\begin{vmatrix} a & b & c \\ d & e & f \\ 5g & 5h & 5i \end{vmatrix}$

17. $\begin{vmatrix} a & b & c \\ g & h & i \\ d & e & f \end{vmatrix}$

In Exercises 24–26, use determinants to decide if the set of vectors is linearly independent.

25. $\begin{bmatrix} 7 \\ -4 \\ -6 \end{bmatrix}, \begin{bmatrix} -8 \\ 5 \\ 7 \end{bmatrix}, \begin{bmatrix} 7 \\ 0 \\ -5 \end{bmatrix}$

3.3 EXERCISES

Use Cramer's rule to compute the solutions of the systems in Exercises 1–6.

6.
$$\begin{aligned} 2x_1 + x_2 + x_3 &= 4 \\ -x_1 + \phantom{x_2 + {}} 2x_3 &= 2 \\ 3x_1 + x_2 + 3x_3 &= -2 \end{aligned}$$

In Exercises 11–16, compute the adjugate of the given matrix, and then use Theorem 8 to give the inverse of the matrix.

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