GO COUGARS!

p 522 Homework Questions

In Exercises 41–44, write the system of linear equations represented by the augmented matrix. Then use back-substitution to find the solution. (Use the variables x, y, and z, if applicable.)

41. $\left[\begin{array}{cc|c} 1 & -2 & 4 \\ 0 & 1 & -3 \end{array}\right]$

43. $\left[\begin{array}{ccc|c} 1 & -1 & 2 & 4 \\ 0 & 1 & -1 & 2 \\ 0 & 0 & 1 & -2 \end{array}\right]$

In Exercises 49–54, use matrices to solve the system of equations, if possible. Use Gaussian elimination with back-substitution.

49. $\begin{cases} x + 2y = 7 \\ 2x + y = 8 \end{cases}$

50. $\begin{cases} 2x + 6y = 16 \\ 2x + 3y = 7 \end{cases}$

51. $\begin{cases} -x + y = -22 \\ 3x + 4y = 4 \\ 4x - 8y = 32 \end{cases}$

52. $\begin{cases} x + 2y = 0 \\ x + y = 6 \\ 3x - 2y = 8 \end{cases}$

53. $\begin{cases} 3x + 2y - z + w = 0 \\ x - y + 4z + 2w = 25 \\ -2x + y + 2z - w = 2 \\ x + y + z + w = 6 \end{cases}$

54. $\begin{cases} x - 4y + 3z - 2w = 9 \\ 3x - 2y + z - 4w = -13 \\ -4x + 3y - 2z + w = -4 \\ -2x + y - 4z + 3w = -10 \end{cases}$

In Exercises 55–60, use matrices to solve the system of equations, if possible. Use Gauss-Jordan elimination.

55. $\begin{cases} x - 3z = -2 \\ 3x + y - 2z = 5 \\ 2x + 2y + z = 4 \end{cases}$

56. $\begin{cases} 2x - y + 3z = 24 \\ 2y - z = 14 \\ 7x - 5y = 6 \end{cases}$

60. $\begin{cases} 2x + 2y - z = 2 \\ x - 3y + z = 28 \\ -x + y = 14 \end{cases}$

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7.7 The Determinant of a Square Matrix

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The determinant

$$A=\begin{bmatrix} a & b \\ c & d \end{bmatrix}$$

the det(A) or |A|=*ad-bc*

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Find the determinant of

$$A=\begin{bmatrix} 2 & -1 \\ 3 & 5 \end{bmatrix} \quad |A| = 2\cdot 5 - 3(-1) = 10+3 = 13$$

$$B=\begin{bmatrix} 1 & 0 \\ -4 & 5 \end{bmatrix} \quad |B| = 5$$

$$C=\begin{bmatrix} 3 & -3 \\ -2 & 2 \end{bmatrix} \quad |C| = 0$$

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HOMEWORK

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