

1

Find the augmented matrix representing the system of equations.

$$\begin{cases} x_1 + x_2 + x_3 = 5 \\ x_1 + 5x_2 + x_3 = 5 \\ x_1 + 5x_2 + 4x_3 = 3 \end{cases}$$

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2. -/12 pointsBerrFinMath1 3.3.002.

Find the augmented matrix representing the system of equations.

$$\begin{cases} 4x_1 + x_2 + 2x_3 + 3x_4 + 2x_5 = 5 \\ x_1 + x_2 + 4x_3 + 4x_4 + 4x_5 = -5 \end{cases}$$

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3. -/1 pointsBerrFinMath1 3.3.003.

Interpret the row-reduced matrix as the solution of a system of equations. (Enter your answers as a comma-separated list. If the system is inconsistent, answer INCONSISTENT. If the system is dependent, parametrize the solutions in terms of the parameter t .)

$$\left(\begin{array}{ccc|c} 1 & 0 & 0 & 7 \\ 0 & 1 & 0 & 3 \\ 0 & 0 & 1 & -2 \end{array} \right)$$

$(x_1, x_2, x_3) = ($

$)$

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Use an appropriate row operation or sequence of row operations to find the equivalent row-reduced matrix.

$$\left(\begin{array}{ccc|c} 0 & 1 & 0 & 6 \\ 1 & 0 & 0 & 8 \\ 0 & 0 & 1 & 5 \end{array} \right)$$

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5. -/12 pointsBerrFinMath1 3.3.007.

Use an appropriate row operation or sequence of row operations to find the equivalent row-reduced matrix.

$$\left(\begin{array}{ccc|c} 1 & 0 & 1 & 9 \\ 0 & 1 & 0 & 5 \\ 0 & 0 & 1 & 7 \end{array} \right)$$

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6. -/1 pointsBerrFinMath1 3.3.008.

Solve the system of equations by the Gauss-Jordan method. (Enter your answers as a comma-separated list. If the system is inconsistent, answer INCONSISTENT. If the system is dependent, parametrize the solutions in terms of the parameter t .)

$$\begin{cases} x_1 + x_2 + x_3 = 3 \\ x_1 + 2x_2 + 2x_3 = 3 \\ x_1 + 3x_2 + 2x_3 = -2 \end{cases}$$

$(x_1, x_2, x_3) = ($

)

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Formulate the situation as a system of linear equations. Be sure to state clearly the meaning of each variable. Solve using the Gauss-Jordan method. State your final answer in terms of the original question. (If the system is inconsistent, answer INCONSISTENT. If the system is dependent, parametrize the solutions in terms of the parameters u and v .)

A large commercial farm needs 37,500 pounds of potash, 73,500 pounds of nitrogen, and 27,000 pounds of phosphoric acid. Three brands of fertilizer, GrowRite, MiracleMix, and GreatGreen, are available and contain the amounts of potash, nitrogen, and phosphoric acid per truckload listed in the table. How many truckloads of each brand should be used to provide the required potash, nitrogen, and phosphoric acid?

$x_1 =$ truckloads of GrowRite
 $x_2 =$ truckloads of MiracleMix
 $x_3 =$ truckloads of GreatGreen

(Pounds per truckload)	GrowRite	MiracleMix	GreatGreen
Potash	400	600	700
Nitrogen	500	1000	1600
Phosphoric acid	300	400	500

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8. -/9 pointsBerrFinMath1 3.4.001.

Use the given matrix to find the expression.

$$A = \begin{pmatrix} 1 & 5 & 6 \\ 7 & 9 & 4 \\ 5 & 3 & 4 \end{pmatrix}; A^t$$

$$A^t = \begin{pmatrix} \text{ } & \text{ } & \text{ } \\ \text{ } & \text{ } & \text{ } \\ \text{ } & \text{ } & \text{ } \end{pmatrix}$$

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9. -/9 pointsBerrFinMath1 3.4.002.

Use the given matrix to find the expression.

$$C = \begin{pmatrix} 1 & 3 & 1 \\ 5 & 7 & 9 \\ 6 & 9 & 5 \end{pmatrix}; 3C$$

$$3C = \begin{pmatrix} \text{ } & \text{ } & \text{ } \\ \text{ } & \text{ } & \text{ } \\ \text{ } & \text{ } & \text{ } \end{pmatrix}$$

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Use the given matrix to find the expression.

$$B = \begin{pmatrix} 6 & 5 & 2 \\ 6 & 8 & 1 \\ 7 & 5 & 1 \end{pmatrix}; -B$$

$$-B = \begin{pmatrix} \boxed{} & \boxed{} & \boxed{} \\ \boxed{} & \boxed{} & \boxed{} \\ \boxed{} & \boxed{} & \boxed{} \end{pmatrix}$$

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11. -/9 pointsBerrFinMath1 3.4.004.

Use the given matrices to find the expression.

$$A = \begin{pmatrix} 8 & 5 & 4 \\ 8 & 1 & 2 \\ 2 & 3 & 8 \end{pmatrix} \quad C = \begin{pmatrix} 6 & 5 & 9 \\ 6 & 5 & 3 \\ 3 & 2 & 4 \end{pmatrix}; A + C$$

$$A + C = \begin{pmatrix} \boxed{} & \boxed{} & \boxed{} \\ \boxed{} & \boxed{} & \boxed{} \\ \boxed{} & \boxed{} & \boxed{} \end{pmatrix}$$

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12. -/9 pointsBerrFinMath1 3.4.005.

Use the given matrices to find the expression.

$$A = \begin{pmatrix} 7 & 9 & 6 \\ 1 & 1 & 1 \\ 1 & 2 & 8 \end{pmatrix} \quad C = \begin{pmatrix} 7 & 5 & 4 \\ 4 & 5 & 3 \\ 9 & 8 & 1 \end{pmatrix}; C - (A + I)$$

$$C - (A + I) = \begin{pmatrix} \boxed{} & \boxed{} & \boxed{} \\ \boxed{} & \boxed{} & \boxed{} \\ \boxed{} & \boxed{} & \boxed{} \end{pmatrix}$$

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13. -/4 pointsBerrFinMath1 3.4.006.

Find the matrix product.

$$\begin{pmatrix} 4 \\ 2 \end{pmatrix} \cdot \begin{pmatrix} 2 & 1 \end{pmatrix}$$

$$\begin{pmatrix} \boxed{} & \boxed{} \\ \boxed{} & \boxed{} \end{pmatrix}$$

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Find the matrix product.

$$\begin{pmatrix} 2 & 1 & 5 \\ 5 & 2 & 4 \end{pmatrix} \begin{pmatrix} 2 \\ -4 \\ 5 \end{pmatrix}$$

$$\begin{pmatrix} \\ \end{pmatrix}$$

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15. -/4 pointsBerrFinMath1 3.4.008.

Find the matrix product.

$$\begin{pmatrix} 2 & 1 & 3 \\ 2 & 3 & 2 \end{pmatrix} \begin{pmatrix} 2 & 3 \\ 3 & 3 \\ 3 & 2 \end{pmatrix}$$

$$\begin{pmatrix} & \\ & \end{pmatrix}$$

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16. -/15 pointsBerrFinMath1 3.4.009.

Rewrite the system of linear equations as a matrix equation $AX = B$.

$$\begin{cases} x_1 + 5x_2 + 4x_3 = 4 \\ x_1 + x_2 + x_3 = 5 \\ 6x_1 + 4x_2 + 3x_3 = 9 \end{cases}$$

$$\begin{pmatrix} & & \\ & & \\ & & \end{pmatrix} \begin{pmatrix} & & \\ & & \\ & & \end{pmatrix} \begin{pmatrix} \\ \\ \end{pmatrix} = \begin{pmatrix} \\ \\ \end{pmatrix}$$

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Rewrite the system of linear equations as a matrix equation $AX = B$.

$$\begin{cases} 2x_1 + 4x_2 - 5x_3 + x_4 + 5x_5 = 4 \\ x_1 + x_2 - 4x_3 + x_4 + 5x_5 = 4 \end{cases}$$

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$$\left(\begin{array}{|c|} \hline \\ \hline \end{array} \begin{array}{|c|} \hline \\ \hline \end{array} \begin{array}{|c|} \hline \\ \hline \end{array} \begin{array}{|c|} \hline \\ \hline \end{array} \begin{array}{|c|} \hline \\ \hline \end{array} \right) \begin{pmatrix} \\ \\ \\ \\ \\ \end{pmatrix} = \left(\begin{array}{|c|} \hline \\ \hline \end{array} \right)$$

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18. -/24 points BerrFinMath1 3.4.011.

Formulate the situation in matrix form. Be sure to indicate the meaning of your rows and columns. Find the requested quantities using the appropriate matrix arithmetic.

A car dealer sells sedans, station wagons, vans, and pickup trucks at sales lots in Oakdale and Roanoke. The "dealer markup" is the difference between the sticker price and the dealer invoice price. The dealer invoice prices at both locations are the same: \$15,000 per sedan, \$19,000 per wagon, \$24,000 per van, and \$25,000 per pickup. The sticker prices at the Oakdale lot are \$19,900 per sedan, \$21,900 per wagon, \$26,900 per van, and \$27,900 per pickup, while at the Roanoke lot the sticker prices are \$17,900 per sedan, \$22,900 per wagon, \$28,900 per van, and \$29,900 per pickup. Represent these prices as a dealer invoice matrix D and a sticker price matrix S . Use these matrices to find the dealer markup matrix M for these vehicles at these sales lots. (Let row 1 represent the dealer in Oakdale and row 2 represent the dealer in Roanoke.)

	sedan	station wagon	van	pickup truck
$D =$				
$S =$				
$M =$				

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Show My Work (Optional) ?

Find the augmented matrix representing the system of equations.

$$\begin{cases} x_1 + x_2 + x_3 = 5 \\ x_1 + 3x_2 + x_3 = 5 \\ x_1 + 3x_2 + 4x_3 = 2 \end{cases}$$

Show My Work (Optional) ?

2. -/12 pointsBerrFinMath1 3.3.002.

Find the augmented matrix representing the system of equations.

$$\begin{cases} 3x_1 + x_2 + 3x_3 + 3x_4 + 2x_5 = 3 \\ x_1 + x_2 + 4x_3 + 3x_4 + 4x_5 = -5 \end{cases}$$

Show My Work (Optional) ?

3. -/1 pointsBerrFinMath1 3.3.003.

Interpret the row-reduced matrix as the solution of a system of equations. (Enter your answers as a comma-separated list. If the system is inconsistent, answer INCONSISTENT. If the system is dependent, parametrize the solutions in terms of the parameter t .)

$$\left(\begin{array}{ccc|c} 1 & 0 & 0 & 3 \\ 0 & 1 & 0 & 7 \\ 0 & 0 & 1 & -1 \end{array} \right)$$

$(x_1, x_2, x_3) = ($

)

Show My Work (Optional) ?

4. -/12 pointsBerrFinMath1 3.3.006.

Use an appropriate row operation or sequence of row operations to find the equivalent row-reduced matrix.

$$\left(\begin{array}{ccc|c} 0 & 1 & 0 & 6 \\ 1 & 0 & 0 & 2 \\ 0 & 0 & 1 & 8 \end{array} \right)$$

Show My Work (Optional) ?

Use an appropriate row operation or sequence of row operations to find the equivalent row-reduced matrix.

$$\begin{pmatrix} 1 & 0 & 1 & | & 6 \\ 0 & 1 & 0 & | & 9 \\ 0 & 0 & 1 & | & 2 \end{pmatrix}$$

$$\left(\begin{array}{ccc|c} & & & \\ & & & \\ & & & \end{array} \right)$$

Show My Work (Optional) ?

6. -/1 pointsBerrFinMath1 3.3.008.

Solve the system of equations by the Gauss-Jordan method. (Enter your answers as a comma-separated list. If the system is inconsistent, answer INCONSISTENT. If the system is dependent, parametrize the solutions in terms of the parameter t .)

$$\begin{cases} x_1 + x_2 + x_3 = 10 \\ x_1 + 2x_2 + 2x_3 = 18 \\ x_1 + 3x_2 + 2x_3 = 23 \end{cases}$$

$$(x_1, x_2, x_3) = ($$

$$,)$$

Show My Work (Optional) ?

7. -/3 pointsBerrFinMath1 3.3.011.

Formulate the situation as a system of linear equations. Be sure to state clearly the meaning of each variable. Solve using the Gauss-Jordan method. State your final answer in terms of the original question. (If the system is inconsistent, answer INCONSISTENT. If the system is dependent, parametrize the solutions in terms of the parameters u and v .)

A large commercial farm needs 34,500 pounds of potash, 65,000 pounds of nitrogen, and 24,500 pounds of phosphoric acid. Three brands of fertilizer, GrowRite, MiracleMix, and GreatGreen, are available and contain the amounts of potash, nitrogen, and phosphoric acid per truckload listed in the table. How many truckloads of each brand should be used to provide the required potash, nitrogen, and phosphoric acid?

$$\begin{aligned} x_1 &= \text{ } \text{ truckloads of GrowRite} \\ x_2 &= \text{ } \text{ truckloads of MiracleMix} \\ x_3 &= \text{ } \text{ truckloads of GreatGreen} \end{aligned}$$

(Pounds per truckload)	GrowRite	MiracleMix	GreatGreen
Potash	400	600	700
Nitrogen	500	1000	1600
Phosphoric acid	300	400	500

Show My Work (Optional) ?

8. -/9 pointsBerrFinMath1 3.4.001.

Use the given matrix to find the expression.

$$A = \begin{pmatrix} 6 & 9 & 5 \\ 6 & 1 & 2 \\ 6 & 7 & 4 \end{pmatrix}; A^t$$

$$A^t = \left(\begin{array}{ccc|c} & & & \\ & & & \\ & & & \end{array} \right)$$

Show My Work (Optional) ?

Use the given matrix to find the expression.

$$C = \begin{pmatrix} 6 & 7 & 1 \\ 5 & 8 & 7 \\ 8 & 4 & 5 \end{pmatrix}; 3C$$

$$3C = \left(\begin{array}{|c|c|c|} \hline & & \\ \hline & & \\ \hline & & \\ \hline \end{array} \right)$$

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10. -/9 pointsBerrFinMath1 3.4.004.

Use the given matrices to find the expression.

$$A = \begin{pmatrix} 7 & 2 & 6 \\ 9 & 1 & 3 \\ 3 & 2 & 4 \end{pmatrix} \quad C = \begin{pmatrix} 4 & 1 & 6 \\ 7 & 9 & 6 \\ 1 & 2 & 8 \end{pmatrix}; A + C$$

$$A + C = \left(\begin{array}{|c|c|c|} \hline & & \\ \hline & & \\ \hline & & \\ \hline \end{array} \right)$$

Show My Work (Optional) ?

11. -/4 pointsBerrFinMath1 3.4.006.

Find the matrix product.

$$\begin{pmatrix} 1 \\ 2 \end{pmatrix} \cdot \begin{pmatrix} 1 & 5 \end{pmatrix}$$

$$\left(\begin{array}{|c|c|} \hline & \\ \hline & \\ \hline \end{array} \right)$$

Show My Work (Optional) ?

12. -/2 pointsBerrFinMath1 3.4.007.

Find the matrix product.

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

$$\left(\begin{array}{|c|} \hline \\ \hline \\ \hline \end{array} \right)$$

Show My Work (Optional) ?

13. -/4 pointsBerrFinMath1 3.4.008.

Find the matrix product.

$$\begin{pmatrix} 1 & 1 & 3 \\ 2 & 3 & 3 \end{pmatrix} \begin{pmatrix} 1 & 1 \\ 3 & 1 \\ 2 & 2 \end{pmatrix}$$

$$\left(\begin{array}{|c|c|} \hline & \\ \hline & \\ \hline \end{array} \right)$$

Show My Work (Optional) ?

Rewrite the system of linear equations as a matrix equation $AX = B$.

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$$\begin{cases} x_1 + 3x_2 + 6x_3 = 3 \\ x_1 + x_2 + x_3 = 5 \\ 2x_1 + 2x_2 + 4x_3 = 3 \end{cases}$$

$$\left(\begin{bmatrix} & & \\ & & \\ & & \end{bmatrix} \begin{bmatrix} & & \\ & & \\ & & \end{bmatrix} \right) \begin{pmatrix} \\ \\ \\ \\ \\ \\ \\ \\ \\ \end{pmatrix} = \begin{pmatrix} \\ \\ \end{pmatrix}$$

Show My Work (Optional) ?

15. /17 points BerrFinMath1 3.4.010.

Rewrite the system of linear equations as a matrix equation $AX = B$.

$$\begin{cases} 4x_1 + 5x_2 - 5x_3 + x_4 + 5x_5 = 5 \\ x_1 + x_2 - 5x_3 + x_4 + 3x_5 = 4 \end{cases}$$

$$\left(\begin{bmatrix} & & & & \\ & & & & \end{bmatrix} \begin{bmatrix} & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \end{bmatrix} \right) \begin{pmatrix} \\ \\ \\ \\ \\ \\ \\ \\ \\ \end{pmatrix} = \begin{pmatrix} \\ \end{pmatrix}$$

Show My Work (Optional) ?

Formulate the situation in matrix form. Be sure to indicate the meaning of your rows and columns. Find the requested quantities using the appropriate matrix arithmetic.

A sports apparel company manufactures shorts, tee shirts, and caps in Costa Rica and Honduras for importation and sale in the United States. In Costa Rica the labor costs per item are 65¢ per pair of shorts, 20¢ per tee shirt, and 45¢ per cap, while the costs of the necessary materials are \$1.70 per pair of shorts, 95¢ per tee shirt, and \$1.20 per cap. In Honduras the labor costs per item are 80¢ per pair of shorts, 25¢ per tee shirt, and 55¢ per cap, while the costs of the necessary materials are \$1.60 per pair of shorts, 75¢ per tee shirt, and \$1.15 per cap. Represent these costs as a labor cost matrix L and a materials cost matrix M . Use these matrices to find the total cost matrix C for these products in these countries. (Let the first row represent the cost, in pennies, in Costa Rica and the second row represent the cost, in pennies, in Honduras.)

$$L = \begin{pmatrix} \text{shorts} & \text{tee shirt} & \text{cap} \\ \hline & & \\ \hline & & \end{pmatrix}$$

$$M = \begin{pmatrix} & & \\ \hline & & \\ \hline & & \end{pmatrix}$$

$$C = \begin{pmatrix} & & \\ \hline & & \\ \hline & & \end{pmatrix}$$

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N. Use an appropriate row operation or sequence of row operations to find the equivalent row-reduced matrix:

$$\begin{pmatrix} 1 & 0 & 1 & 15 \\ 0 & 1 & 0 & 9 \\ 0 & 0 & 1 & -2 \end{pmatrix}$$