CENGAGE | WEBASSIGN

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← **MAT230, section 30 T5 2021 SEGALA, Spring 2021**

Unit 3 Quiz (3.3, 3.4) (Quiz)

🎓 **INSTRUCTOR**
James Segala
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Current Score

QUESTION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
POINTS	–/12	–/12	–/1	–/12	–/12	–/1	–/3	–/9	–/9	–/9	–/4	–/2	–/4	–/15	–/17	–/18

TOTAL SCORE	
–/140	**0.0%**

Due Date

SUN, MAR 28, 2021
8:59 PM PDT

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Assignment Submission & Scoring

Assignment Submission

For this assignment, you submit answers by question parts. The number of submissions remaining for each question part only changes if you submit or change the answer.

Assignment Scoring

Your last submission is used for your score.

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1. **[–/12 Points]**   DETAILS   BERRFINMATH1 3.3.001.   MY NOTES   ASK YOUR TEACHER

Find the augmented matrix representing the system of equations.

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

Show My Work (Optional) ❓

[–/12 Points]   DETAILS   **BERRFINMATH1 3.3.002.**   MY NOTES   ASK YOUR TEACHER

Find the augmented matrix representing the system of equations.

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

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

Show My Work (Optional) ?

[–/1 Points]   DETAILS   **BERRFINMATH1 3.3.003.**   MY NOTES   ASK YOUR TEACHER

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.)

$$\left(\begin{array}{ccc|c} 1 & 0 & 0 & 4 \\ 0 & 1 & 0 & 8 \\ 0 & 0 & 1 & -8 \end{array} \right)$$

$(x_1, x_2, x_3) = \left(\boxed{} \right)$

Show My Work (Optional) ?

[–/12 Points]   DETAILS   **BERRFINMATH1 3.3.006.**   MY NOTES   ASK YOUR TEACHER

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

$$\left(\begin{array}{ccc|c} 0 & 1 & 0 & 4 \\ 1 & 0 & 0 & 5 \\ 0 & 0 & 1 & 9 \end{array} \right)$$

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

Show My Work (Optional) ?

[–/12 Points]   DETAILS   **BERRFINMATH1 3.3.007.**   MY NOTES   ASK YOUR TEACHER

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

$$\left(\begin{array}{ccc|c} 1 & 0 & 1 & 7 \\ 0 & 1 & 0 & 3 \\ 0 & 0 & 1 & 8 \end{array} \right)$$

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

Show My Work (Optional) ?

[–/1 Points]   DETAILS   BERRFINMATH1 3.3.008.   MY NOTES   ASK YOUR TEACHER

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.)

$$\begin{cases} x_1 + x_2 + x_3 = -6 \\ x_1 + 2x_2 + 2x_3 = -8 \\ x_1 + 3x_2 + 2x_3 = -13 \end{cases}$$

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

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│             │
├─────────────┤
│             │
└─────────────┘
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$\Big)$

Show My Work (Optional) ⓘ

[–/3 Points]   DETAILS   BERRFINMATH1 3.3.011.   MY NOTES   ASK YOUR TEACHER

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 41,500 pounds of potash, 81,000 pounds of nitrogen, and 29,500 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?

$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

Show My Work (Optional) ⓘ

[–/9 Points]   DETAILS   BERRFINMATH1 3.4.001.   MY NOTES   ASK YOUR TEACHER

Use the given matrix to find the expression.

$$A = \begin{pmatrix} 7 & 9 & 2 \\ 4 & 6 & 5 \\ 3 & 1 & 5 \end{pmatrix}; \ A^t$$

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

Show My Work (Optional) ⓘ

Use the given matrix to find the expression.

$$C = \begin{pmatrix} 7 & 7 & 7 \\ 3 & 4 & 9 \\ 4 & 7 & 6 \end{pmatrix}; \quad 3C$$

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

Show My Work (Optional) ?

Use the given matrices to find the expression.

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

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

Show My Work (Optional) ?

Find the matrix product.

$$\begin{pmatrix} 1 \\ 2 \end{pmatrix} \cdot (3 \quad 5)$$

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

Show My Work (Optional) ?

Find the matrix product.

$$\begin{pmatrix} 5 & 4 & 3 \\ 4 & 5 & 4 \end{pmatrix} \begin{pmatrix} 5 \\ -2 \\ 1 \end{pmatrix}$$

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

Show My Work (Optional) ?

Find the matrix product.

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

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

Show My Work (Optional) ?

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

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

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

Show My Work (Optional) ?

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

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

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

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 $1.60 per pair of shorts, 85¢ per tee shirt, and $1.10 per cap. In Honduras the labor costs per item are 75¢ per pair of shorts, 15¢ per tee shirt, and 55¢ per cap, while the costs of the necessary materials are $1.50 per pair of shorts, 80¢ 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.)

shorts   tee shirt   cap

$$L = \begin{pmatrix} \rule{3em}{0pt} & \rule{3em}{0pt} & \rule{3em}{0pt} \\ \rule{3em}{0pt} & \rule{3em}{0pt} & \rule{3em}{0pt} \end{pmatrix}$$

$$M = \begin{pmatrix} \rule{3em}{0pt} & \rule{3em}{0pt} & \rule{3em}{0pt} \\ \rule{3em}{0pt} & \rule{3em}{0pt} & \rule{3em}{0pt} \end{pmatrix}$$

$$C = \begin{pmatrix} \rule{3em}{0pt} & \rule{3em}{0pt} & \rule{3em}{0pt} \\ \rule{3em}{0pt} & \rule{3em}{0pt} & \rule{3em}{0pt} \end{pmatrix}$$

Show My Work (Optional) ?

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