

1. (1 pt) Library/WHFreeman/Holt_linear_algebra/Chaps_1-4/holt_01_02_007.pg

Determine if the matrix

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

is in echelon form, reduced row echelon form, or neither. Choose the *most appropriate* answer.

Answer:

2. (1 pt) Library/WHFreeman/Holt_linear_algebra/Chaps_1-4/holt_01_02_006.pg

Determine if the matrix

$$\begin{bmatrix} 1 & -8 & 0 & 3 & 8 \\ 0 & 0 & 1 & -4 & -4 \\ 0 & 0 & 0 & 0 & 0 \end{bmatrix}$$

is in echelon form, reduced row echelon form, or neither. Choose the *most appropriate* answer.

Answer:

3. (1 pt) Library/WHFreeman/Holt_linear_algebra/Chaps_1-4/holt_01_02_010.pg

Determine if the matrix

$$\begin{bmatrix} 1 & 9 & 0 & 6 & 0 \\ 0 & 0 & 1 & 3 & 0 \\ 0 & 0 & 0 & 0 & 1 \end{bmatrix}$$

is in echelon form, reduced row echelon form, or neither. Choose the *most appropriate* answer.

Answer:

4. (1 pt) Library/TCNJ/TCNJ_LinearSystems/problem11.pg
Give a geometric description of the following systems of equations.

1. $7x + 7y = -6$
 $6x + 5y = 8$

2. $4x + 4y = 6$
 $8x + 8y = 13$

3. $4x + 4y = 6$
 $8x + 8y = 12$

5. (1 pt) Library/TCNJ/TCNJ_LinearSystems/problem1.pg

Determine whether the following system has no solution, an infinite number of solutions or a unique solution.

1. $-6x + 5y = 5$
 $-4x + 4y = 7$
 $-10x + 11y = 23$

2. $-10x + 15y = 15$
 $4x - 6y = -6$
 $12x - 18y = -18$

3. $-6x + 5y = 5$
 $-4x + 4y = 7$
 $-10x + 11y = 25$

6. (1 pt) Library/TCNJ/TCNJ_LinearSystems/problem3.pg

Give a geometric description of the following systems of equations

1. $-4x - 16y = -4$
 $3x + 12y = 3$
 $7x + 28y = 7$

2. $x - 3y = 5$
 $2x - 3y = 9$
 $7x - 9y = 31$

3. $x - 3y = 5$
 $2x - 3y = 9$
 $7x - 9y = 28$

7. (1 pt) Library/TCNJ/TCNJ_LinearSystems/problem2.pg

Determine whether the following system has no solution, an infinite number of solutions or a unique solution.

1. $-7x + 2y + 6z = 3$
 $-9x + 5y + 7z = 10$

2. $-15x - 20y + 15z = 0$
 $6x + 8y - 6z = -3$

3. $-15x - 20y + 15z = 0$
 $6x + 8y - 6z = 0$

8. (1 pt) Library/TCNJ/TCNJ_LinearSystems/problem4.pg

Give a geometric description of the following system of equations

1. $2x + 4y - 6z = 12$
 $-x + 5y - 9z = 1$

2. $2x + 4y - 6z = 12$
 $-3x - 6y + 9z = 16$

$$\begin{cases} 2x + 4y - 6z = -12 \\ -3x - 6y + 9z = 18 \end{cases}$$

9. (1 pt) Library/TCNJ/TCNJ.LinearSystems/problem6.pg

Give a geometric description of the following systems of equations

$$\begin{cases} 6x - 9y + 6z = 3 \\ 10x - 15y + 10z = 5 \\ 12x - 18y + 12z = 6 \end{cases}$$

$$\begin{cases} x + 2y + 8z = 1 \\ x + 3y + 10z = 0 \\ 4x + 8y + 28z = 3 \end{cases}$$

$$\begin{cases} -5x + 3y - z = -3 \\ -4x + 2y + z = 2 \\ 11x - 5y - 5z = -11 \end{cases}$$

$$\begin{cases} -5x + 3y - z = -3 \\ -4x + 2y + z = 2 \\ 11x - 5y - 5z = -8 \end{cases}$$

10. (1 pt) Library/TCNJ/TCNJ.LinearSystems/problem17.pg

Determine whether the following system has no solution, an infinite number of solutions or a unique solution.

$$\begin{cases} -3x - y + z = -5 \\ -4x - 2y + z = 5 \\ -13x - 7y + 3z = 22 \end{cases}$$

$$\begin{cases} 5x + 15y + 21z = 0 \\ -4x - 13y - 17z = 8 \\ 2x + 6y + 8z = 0 \end{cases}$$

$$\begin{cases} 10x + 2y + 2z = 6 \\ 25x + 5y + 5z = 15 \\ -30x - 6y - 6z = -18 \end{cases}$$

$$\begin{cases} -3x - y + z = -5 \\ -4x - 2y + z = 5 \\ -13x - 7y + 3z = 25 \end{cases}$$

11. (1 pt) Library/Rochester/setAlgebra35SystemMatrices/solve_RREF_2.pg

Given the augmented matrix below, solve the associated system of equations. For your variables, use $x_1, x_2, x_3, x_4, x_5, x_6, x_7,$ and x_8 .

$$\left[\begin{array}{cccccccc|c} 1 & -5 & 1 & -5 & 0 & 7 & -8 & 4 & -9 \\ 0 & 0 & 0 & 0 & 1 & 1 & 1 & -6 & 0 \\ 0 & 0 & 0 & 0 & 0 & 1 & 1 & -6 & -5 \\ 0 & 0 & 0 & 0 & 0 & 0 & 1 & -6 & 9 \end{array} \right]$$

The solution is (_____, _____, _____, _____, _____, _____, _____, _____)

12. (1 pt) Library/TCNJ/TCNJ.RowReduction/problem10.pg

If the following system has infinitely many solutions,

$$\begin{cases} 7x - 5y - 4z = 5 \\ -9x + 2y - 2z = 7 \\ -11x - y + hz = k \end{cases}$$

then $k = \underline{\hspace{2cm}}$, $h = \underline{\hspace{2cm}}$

13. (1 pt) Library/ma112DB/set11/sw7.3_21.pg

Given the system of equations

$$\begin{cases} x + y + z = -2, \\ y - 3z = -4, \\ 2x + y + 5z = 1, \end{cases}$$

- (a) determine whether the system is inconsistent or dependent; Your answer is (input inconsistent or dependent) _____
 (b) if your answer is dependent, find the complete solution. Write x and y as functions of z .

$x = \underline{\hspace{2cm}}$

$y = \underline{\hspace{2cm}}$

14. (1 pt) Library/TCNJ/TCNJ.RowReduction/problem5.pg

Suppose that the following

$$\begin{cases} 6x + 8y = 2 \\ 21x + 28y = k \\ 12x + 16y = 4 \end{cases}$$

is a consistent system. Then $k = \underline{\hspace{2cm}}$

15. (1 pt) Library/Utah/College.Algebra/set11_Systems_of_Equations_and_Inequalities/1050s11p3.pg

The principle that you process the coefficient matrix only once is so important that we need to practice some more. This and the next two problems all have the same coefficient matrix. You want to process it just once, unless you enjoy retracing your steps.

The solution of the linear system

$$\begin{cases} r + s + t + u = -14 \\ r + 2s + 3t + 4u = -35 \\ r - s + 2t - u = -1 \\ r + 2s - 3t + 2u = -17 \end{cases}$$

is

$r = \underline{\hspace{2cm}}, s = \underline{\hspace{2cm}}, t = \underline{\hspace{2cm}}, u = \underline{\hspace{2cm}}.$

16. (1 pt) Library/Utah/College.Algebra/set11_Systems_of_Equations_and_Inequalities/1050s11p4.pg

The solution of the linear system

$$\begin{cases} r + s + t + u = 4 \\ r + 2s + 3t + 4u = 13 \\ r - s + 2t - u = -15 \\ r + 2s - 3t + 2u = 31 \end{cases}$$

is

$$r = \underline{\hspace{1cm}}, s = \underline{\hspace{1cm}}, t = \underline{\hspace{1cm}}, u = \underline{\hspace{1cm}}.$$

17. (1 pt) Library/Utah/College Algebra/set11_Systems_of_Equations_and_Inequalities/1050s11p5.pg

The solution of the linear system

$$\begin{aligned} r + s + t + u &= -1 \\ r + 2s + 3t + 4u &= -11 \\ r - s + 2t - u &= -1 \\ r + 2s - 3t + 2u &= 13 \end{aligned}$$

is

$$r = \underline{\hspace{1cm}}, s = \underline{\hspace{1cm}}, t = \underline{\hspace{1cm}}, u = \underline{\hspace{1cm}}.$$

18. (1 pt) Library/WHFreeman/Holt_linear_algebra/Chaps.1-4/holt_01.01.003.pg

Determine which of the points (2,4), (5,5), and (-3,3) lie on both the lines $-x_1 + 3x_2 = 10$ and $-x_1 + 5x_2 = 18$.

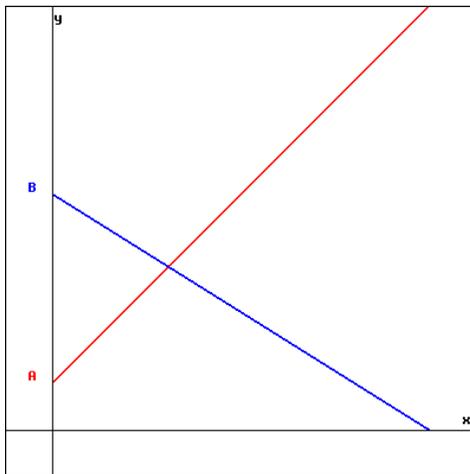
Answer: _____

19. (1 pt) Library/FortLewis/Algebra/5-6-Linear-systems/MCH1-5-6-22-Linear-systems.pg

Find the point of intersection of the lines in the figure, given that line A, in red, has equation $y = x + 3$ and line B, in blue, has equation $2x + 3y = 12$.

$$x = \underline{\hspace{1cm}}$$

$$y = \underline{\hspace{1cm}}$$



(Click on graph to enlarge)

20. (1 pt) Library/Rochester/setAlgebra35SystemMatrices-/solve_RREF.pg

Given the augmented matrix below, solve the associated system of equations. For your variables, use x_1, x_2, x_3, x_4, x_5 , and x_6 .

$$\left[\begin{array}{cccccc|c} 1 & -2 & -4 & 0 & 3 & 5 & -1 \\ 0 & 0 & 1 & -3 & 4 & -3 & -3 \\ 0 & 0 & 0 & 0 & 0 & 1 & -6 \end{array} \right]$$

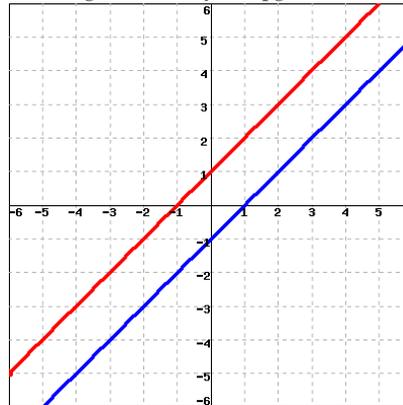
The solution is (_____, _____, _____, _____, _____, _____)

21. (1 pt) local/Library/UI/holt.01.01.002.pg

Determine which of the points $(-1, -1, 0)$, $(-5, 1, -1)$, and $(2, -5, 2)$ lie in the plane $x_1 - 3x_2 - 5x_3 = 2$.

Answer: _____

22. (1 pt) Library/CollegeOfIdaho/setAlgebra_03.01_SystemOfLinearEq-/31IntAlg_03_LinearSystem.pg



The graphs of two linear equations are shown above. Find the solution.

Answer: _____

23. (1 pt) Library/WHFreeman/Holt_linear_algebra/Chaps.1-4/holt_01.04.028.pg

Find the values of the coefficients a, b and c so that the conditions

$$f(0) = 6, \quad f'(0) = -15, \quad \text{and} \quad f''(0) = -3$$

hold for the function

$$f(x) = ae^x + be^{-2x} + ce^{3x}.$$

$$a = \underline{\hspace{1cm}}$$

$$b = \underline{\hspace{1cm}}$$

$$c = \underline{\hspace{1cm}}$$

24. (1 pt) Library/WHFreeman/Holt_linear_algebra/Chaps.1-4/holt.01.04.022.pg

When using partial fractions to find antiderivatives in calculus we decompose complicated rational expressions into the sum of simpler expressions that can be integrated individually. The required decomposition is

$$\frac{30}{x(x^2 + 5)} = \frac{A}{x} + \frac{Bx + C}{x^2 + 5}$$

Find the values of the missing constants.

$$A = \underline{\hspace{2cm}}$$

$$B = \underline{\hspace{2cm}}$$

$$C = \underline{\hspace{2cm}}$$

A system of equations can have exactly 1 solution.

- A. True
- B. False

A system of linear equations can have exactly 1 solution.

- A. True
- B. False

A system of linear equations has no solution if and only if there is a pivot column in the echelon form of its augmented matrix.

- A. True
- B. False

A system of linear equations has an infinite number of solutions if and only if its associated augmented matrix has a column corresponding to a free variable.

- A. True
- B. False

If a system of linear equations has an infinite number of solutions, then its associated augmented matrix has a column corresponding to a free variable.

- A. True
- B. False

26. (1 pt) Library/WHFreeman/Holt_linear_algebra/Chaps.1-4/2.1.7.pg

Express the following vector equation as a system of linear equations.

$$x_1 \begin{bmatrix} 4 \\ -3 \end{bmatrix} + x_2 \begin{bmatrix} 2 \\ 6 \end{bmatrix} = \begin{bmatrix} -5 \\ 9 \end{bmatrix}$$

(Keep the equations in order.)

$$\underline{\hspace{1cm}} x_1 + \underline{\hspace{1cm}} x_2 = \underline{\hspace{1cm}}.$$

$$\underline{\hspace{1cm}} x_1 + \underline{\hspace{1cm}} x_2 = \underline{\hspace{1cm}}.$$