- 1. Use an augmented matrix and elementary row operations to solve the system of linear equations.
 - $\begin{array}{l} -3x 3y = 3 \\ -3x 2y = 12 \end{array}$

- A. x = -8 y = 11B. x = -6 y = 13C. x = -7 y = 12D. x = -14 y = 5E. x = -13y = 6
- F. There is no solution.
- G. There are infinitely many solutions.

H.
$$\begin{aligned} x &= -10\\ y &= 9 \end{aligned}$$

2. A small boat can go 21 km downstream in 2 hr but only 18 km upstream in 2 hr. Determine the rate of the boat and the rate of the current.

A. The speed of the boat is 9.4 km/hr and the speed of the current is 1.6 km/hr.

- B. The speed of the boat is 9.8 km/hr and the speed of the current is 0.8 km/hr.
- C. The speed of the boat is 10.3 km/hr and the speed of the current is 0.7 km/hr.

D. The speed of the boat is 10.5 km/hr and the speed of the current is 0.4 km/hr.

E. The speed of the boat is 10.6 km/hr and the speed of the current is 0.3 km/hr.

F. The speed of the boat is 9.7 km/hr and the speed of the current is 1.5 km/hr.

G. The speed of the boat is 9.1 km/hr and the speed of the current is 1.3 km/hr.

H. The speed of the boat is 9.5 km/hr and the speed of the current is 0.1 km/hr.

3. Write a system of linear equations in x and y that is represented by the augmented matrix. $\begin{bmatrix} 4 & -6 & | & 0 \\ 1 & -2 & | & 9 \end{bmatrix}$

- A. $\begin{aligned} x 2y &= 0\\ 4x 6y &= 9\\ 0\\ 0\\ x y &= 0 \end{aligned}$
- $\begin{array}{c} 0x y = 0\\ 2x 4y = 9 \end{array}$
- C. $\begin{aligned} 4x y &= 9\\ 6x 2y &= 0 \end{aligned}$
- D. $\begin{aligned} 4x 6y &= 0\\ x 2y &= 9 \end{aligned}$
- E. $\begin{aligned} 6x 2y &= 9\\ x 4y &= 0 \end{aligned}$
- $F. \quad \begin{array}{c} x 4y = 9\\ 2x 6y = 0 \end{array}$
- G. 2x 4y = 0
- 6x y = 9
- $\begin{array}{ll} \text{H.} & 2x 6y = 9\\ & 4x y = 0 \end{array}$

4. Write a system of linear equations in x and y that is represented by the augmented matrix.	$\left[\begin{array}{c}1\\0\end{array}\right]$	$\begin{array}{c} 0 \\ 1 \end{array}$	$\begin{vmatrix} 8 \\ 7 \end{vmatrix}$]
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- A. $\begin{array}{c} 0y = 8\\ x + y = 7 \end{array}$
- B. $\begin{array}{c} 0y = 7\\ x + y = 8 \end{array}$
- C. $\begin{aligned} x &= 8\\ y &= 7 \end{aligned}$
- D. y = 8x = 7
- $\begin{array}{c} x = 1 \\ x + y = 8 \end{array}$
- $\begin{array}{ll} & 0y = 7\\ & & \\ F. & x + y = 7\\ \end{array}$
- $\begin{array}{c} \mathbf{r} \cdot \mathbf{x} + y = 8 \\ \mathbf{G} \cdot \mathbf{y} = 7 \\ \mathbf{G} \cdot \mathbf{x} = 7 \end{array}$
- G. y = 8x = 7
- H. $\begin{aligned} x &= 7\\ y &= 8 \end{aligned}$

5. Write an augmented matrix for the system of equations.

A.	[(0	0	8]	
		1	$1 \mid$	5	
В.	[]	1 (0	5]	
		0	$1 \mid$	8	
С.	[(0	1	5]	
		0	$1 \mid$	8	
D.	[0	1	8]	
		1	$0 \mid$	5	
F	[]	1 (0	8]	
н		~	4		
Е .	[()	1	5]	
E. F	[() : L :	$1 \mid 1 \mid 1$	5] 5]	
Ŀ. F.) : 1 : 1 :	1 1 1	$\begin{bmatrix} 5 \\ 5 \\ 8 \end{bmatrix}$	
E. F.) : 1 : 1 : 0	$\begin{array}{c c} 1 \\ 1 \\ 1 \\ 1 \\ 0 \\ \end{array}$	5] 5] 8] 5]	
Е. F. G.) : 1 : 1 : 0 : 1	$\begin{array}{c c}1 \\ 1 \\ 1 \\ 1 \\ 0 \\ 1 \\ \end{array}$	$\begin{bmatrix} 5 \\ 5 \\ 8 \end{bmatrix}$ $\begin{bmatrix} 5 \\ 8 \end{bmatrix}$ $\begin{bmatrix} 5 \\ 8 \end{bmatrix}$	
Е. F. G.) : 1 : 1 : 0 : 1 : 1		$\begin{bmatrix} 5 \\ 5 \\ 8 \end{bmatrix} \\ \begin{bmatrix} 5 \\ 8 \end{bmatrix} \\ \begin{bmatrix} 5 \\ 8 \end{bmatrix} \\ 8 \end{bmatrix}$	
Е. F. G. H.) : 1 : 1 : 0 : 1 : 0 :	$ \begin{bmatrix} 1 \\ 1 \\ 1 \end{bmatrix} $ $ \begin{bmatrix} 0 \\ 1 \end{bmatrix} $ $ \begin{bmatrix} 1 \\ 1 \end{bmatrix} $ $ \begin{bmatrix} 0 \\ 1 \end{bmatrix} $	$\begin{bmatrix} 5 \\ 5 \\ 8 \end{bmatrix} \\ \begin{bmatrix} 5 \\ 8 \end{bmatrix} \\ \begin{bmatrix} 5 \\ 8 \end{bmatrix} \\ \begin{bmatrix} 8 \\ 8 \end{bmatrix} \\ \begin{bmatrix} 8 \\ 5 \end{bmatrix} $	

6. Use an augmented matrix and elementary row operations to solve the system of linear equations.

$$2x + 3y = 2$$
$$-2x - 2y = 6$$

A. There is no solution.

- x = -14В. y = 5
- C. $\begin{array}{c} x = -11 \\ y = 8 \end{array}$
- D. x = -8y = 11
- E. $\begin{array}{c} x = -9 \\ y = 10 \end{array}$

F. There are infinitely many solutions.

G. $\begin{array}{c} x = -15 \\ y = 4 \end{array}$ H. $\begin{array}{c} x = -12 \\ y = 7 \end{array}$

x = 8y = 5 7. Write a system of linear equations in x and y that is represented by the augmented matrix. $\begin{bmatrix} 4 & 7 & | & 2 \\ 1 & -6 & | & 5 \end{bmatrix}$

- 6x + 4y = 2А. 7x - y = 5
- x + 4y = 5В. 6x - 7y = 2
- C. 4x + 7y = 2x - 6y = 5
- 4x + y = 5D. $\begin{array}{c} \overset{4u}{7} \overset{+y}{7} \\ 7x - 6y = 2 \end{array}$
- x + 6y = 2Е. 4x - 7y = 5
- F. 7x + 6y = 5x - 4y = 2
- G. 7x + y = 26x 4y = 5
- 6x + 7y = 5Η. 4x - y = 2
- 8. Use an augmented matrix and elementary row operations to solve the system of linear equations.

$$\begin{aligned} x + 3y &= 3\\ -x - 3y &= -3 \end{aligned}$$

- A. There are infinitely many solutions.
- B. x = -2y = 3C. x = 1y = 6
- x = -3D. y = 2
- E. $\begin{array}{c} x = -4 \\ y = 1 \end{array}$
- F. x = -5y = 0
- G. There is no solution.
- x = 3Η. y = 8