1. Use the specified row transformation to change the matrix.

\[
\begin{bmatrix}
1 & 8 & 7 \\
-2 & 9 & -1 \\
6 & 7 & 0
\end{bmatrix}
\]

2 times row 1 plus row 2

What is the transformed matrix?

\[
\begin{bmatrix}
1 & 8 & 7 \\
\square & \square & \square \\
6 & 7 & 0
\end{bmatrix}
\]

Answers 0

25

13

2. Use the Gauss-Jordan method to solve the system of equations. If the system has infinitely many solutions, give the solution with \( z \) arbitrary.

\[
\begin{align*}
x + y - 3z &= -18 \\
3x - 3y + 2z &= -4 \\
x + 3y - 3z &= -20
\end{align*}
\]

The solution set is \( \{(\square, \square, \square)\} \).

(Type an exact answer in simplified form. If the solution is the empty set, type N for each coordinate. If there are infinitely many solutions, type an expression involving \( z \) for each coordinate where \( z \) represents all real numbers.)

Answers -5

-1

4
3. Use Cramer’s rule to solve the system of equations. If \( D = 0 \), use another method to determine the solution set.

\[
\begin{align*}
3x + 3y - 6z &= 10 \\
3x + y - z &= 9 \\
-x - y + 2z &= 4
\end{align*}
\]

The solution set is \( \{\boxed{\,} \} \).

(Type an exact answer in simplified form. If the solution is the empty set, type \( N \) for each coordinate. If there are infinitely many solutions, type an expression involving \( z \) for each coordinate where \( z \) represents all real numbers.)

Answers

\[
\begin{align*}
N \\
N \\
N
\end{align*}
\]

4. Give all solutions of the nonlinear system of equations, including those with nonreal complex components.

\[
\begin{align*}
y &= x^2 + 8x + 10 \\
x + y &= 2
\end{align*}
\]

The solution set is \( \{\boxed{\,}, \boxed{\,}\} \).

(Type an ordered pair. Type an exact answer, using radicals as needed. Express complex numbers in terms of \( i \). Use a comma to separate answers as needed. Type \( N \) if the solution is the empty set. Type \( I \) if there are infinitely many solutions.)

Answer: \((-1,3),(-8,10)\)
5. Plot the graph of the following ellipse, and then identify the domain, range, and center of the ellipse.
\[
\frac{(x - 3)^2}{25} + \frac{(y + 2)^2}{4} = 1
\]
What is the domain?
○ [−2,8]
○ [−4,0]
What is the range?
○ [−2,8]
○ [−4,0]
The center is ___.
(Type an ordered pair.)
Answers
D the first choice
d the second choice
\((3, -2)\)

6. Find the equation of an ellipse satisfying the given conditions.

Foci: (−2, 0) and (2, 0); length of major axis: 8

Choose the correct equation of the ellipse.

○A. \(\frac{x^2}{16} + \frac{y^2}{12} = 1\)
○B. \(\frac{x^2}{4} + \frac{y^2}{16} = 1\)
○C. \(\frac{x^2}{64} + \frac{y^2}{60} = 1\)
○D. \(\frac{x^2}{12} + \frac{y^2}{16} = 1\)

Answer: A
7. Graph the equation. Give the domain and range. Determine whether the graph is a graph of function.

\[ x = \sqrt{1 - \frac{y^2}{9}} \]

Choose the correct graph on the right.

Give the domain.

☐ (Type your answer in interval notation.)

Give the range.

☐ (Type your answer in interval notation.)

Is the graph a graph of a function?

☐ Yes

☐ No

Answers: C

\[ [0,1] \]

\[ [-3,3] \]

the second choice

8. A one-way road passes under an overpass in the shape of half an ellipse, 35 ft high at the center and 20 ft wide. Assuming a truck is 12 ft wide, what is the tallest truck that can pass under the overpass?

The tallest truck that can pass under the overpass is ☐ ft tall.

Answer: 28
9. Sketch the graph of the hyperbola. Determine the foci and the equations of the asymptotes.

\[
\frac{(y - 2)^2}{9} - \frac{(x - 2)^2}{16} = 1
\]

Choose the correct graph of the hyperbola.

☐A.  

☐B.  

☐C.  

☐D.  

The foci are [ ].  
(Use a comma to separate answers. Type an ordered pair. Type an exact answer.)

The asymptotes are \( y = \) [ ] and \( y = \) [ ].  
(Write in slope-intercept form using integers or fractions. If one of the asymptotes has a negative slope, write the equation’s right side in the second box.)

Answers  

\[ (2, 7), (2, -3) \]

\[ \frac{3}{4}x + \frac{1}{2} \]

\[ -\frac{3}{4}x + \frac{7}{2} \]
Graph the equation. Give the domain and range, and determine whether the graph is the graph of a function.

\[ \frac{y}{10} = \sqrt{1 + \frac{x^2}{81}} \]

What is the domain?

☐ (Type your answer in interval notation.)

What is the range?

☐ (Type your answer in interval notation.)

Is the graph of the equation the graph of a function?

☐ Yes

☐ No

Answers

C

\((-\infty, \infty)\)

\([10, \infty)\)

the first choice
11. Find the equation of a hyperbola satisfying the given conditions.

vertices at (0,4) and (0, -4); asymptotes $y = \pm \frac{1}{2}x$

Choose the correct equation.

- $\text{O A. } \frac{y^2}{16} - \frac{x^2}{64} = 1$
- $\text{O B. } \frac{x^2}{16} - \frac{y^2}{64} = 1$
- $\text{O C. } \frac{y^2}{2} - \frac{x^2}{4} = 1$
- $\text{O D. } \frac{x^2}{4} - \frac{y^2}{16} = 1$

Answer: A

12. Find the value of the determinant.

$$\begin{vmatrix} 2 & 8 & 5 \\ 8 & 1 & 1 \\ 9 & -2 & -1 \end{vmatrix}$$

The determinant value is $\square$.

Answer: 13

13. Use Cramer's rule to solve the system of equations. If $D = 0$, use another method to determine the solution set.

$$-2x + 2y = 3$$
$$-6x + 6y = 9$$

The solution set is $\{\square\}$.
(Simplify your answer. Type an ordered pair. If there are infinitely many solutions, type an expression involving $y$ for each coordinate of the ordered pair where $y$ represents all real numbers. Type N if the solution is the empty set.)

Answer: \left(\begin{array}{c} \frac{3 - 2y}{2} \\ y \end{array}\right)
14. Give all solutions of the nonlinear system of equations, including those with nonreal complex components.

\[ 5x^2 + y^2 = 1 \]
\[ x^2 + 2y^2 = 11 \]

The solution set is \{ ( \_ , \_ ) \}.

(Type an ordered pair. Use a comma to separate answers as needed. Type an exact answer, using radicals as needed. Type an integer or a fraction. Express complex numbers in terms of i.)

Answer: \( (i, \sqrt{6}), (-i, \sqrt{6}), (i, -\sqrt{6}), (-i, -\sqrt{6}) \)

15. Let the supply and demand equations for a certain commodity be the following.

supply: \( p = \sqrt{0.1q + 25} - 1 \) 
demand: \( p = \sqrt{36 - 0.1q} \)

a. Find the equilibrium demand.
b. Find the equilibrium price (in dollars).

a. The equilibrium demand is \( \_ \) units.
b. The equilibrium price is \$\_\.

Answers 110
5.00