DO NOW

Solve the system of equations and check

$2x = y + 2$

$x = -y + 7$

$2(-y+7) = y+2$

$-2y + 14 = y + 2$

$+2y \quad +2y$

$14 = 3y + 2$

$-2 \quad -2$

$\frac{12}{3} = \frac{3y}{3}$

$4 = y$

$x = -y + 7$

$x = -(4) + 7$

$x = 3$

Solution

$(3, 4)$

Mar 8-11:26 AM

Using Elimination to Solve a System of Equations

STEP 1: ADD one equation to another to ELIMINATE one variable

Solve the resulting equation

STEP 2: Substitute the value into either original equation to find the value of the second variable

STEP 3: Check your answer in the original equations!

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Find the solution to the system of equations algebraically

$$\begin{cases} 2x - y = 2 \\ x + y = 7 \end{cases}$$

$+$

$3x = 9$

$\frac{3x}{3} = \frac{9}{3}$

$x = 3$

$x + y = 7$

$(3) + y = 7$

$-3 \quad -3$

$y = 4$

Solution $(3, 4)$

Check

$2x - y = 2$

$2(3) - (4) = 2$

$6 - 4 = 2$

$2 = 2$ ✓

$x + y = 7$

$3 + 4 = 7$

$7 = 7$ ✓

Jan 6-3:46 PM

Find the solution to the system of equations algebraically

$$\begin{cases} x + 3y = -13 \\ -x - y = 5 \end{cases}$$

$+$

$2y = -8$

$\frac{2y}{2} = \frac{-8}{2}$

$y = -4$

$-x - y = 5$

$-x - (-4) = 5$

$-x + 4 = 5$

$-4 \quad -4$

$-x = 1$

$\frac{-x}{-1} = \frac{1}{-1}$

$x = -1$

Solution $(-1, -4)$

Check

$x + 3y = -13$

$-1 + 3(-4) = -13$

$-1 + -12 = -13$

$-13 = -13$ ✓

$-x - y = 5$

$-(-1) - (-4) = 5$

$1 + 4 = 5$

$5 = 5$

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Find the solution to the system of equations algebraically

$$\begin{cases} 4x+2y=12 \\ x+2y=8 \end{cases}$$

$5x = 20$

$\frac{5x}{5} = \frac{20}{5}$

$x = 4$

$x + 2y = 8$

$(4) + 2y = 8$

$-4 \quad -4$

$2y = 4$

$\frac{2y}{2} = \frac{4}{2}$

$y = 2$

Solution

(4,2)

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Find the solution to the system of equations algebraically

$$\begin{cases} 4x+12y=12 \\ -4x+2y=16 \end{cases}$$

$14y = 28$

$\frac{14y}{14} = \frac{28}{14}$

$y = 2$

Solution

(-3,2)

$4x + 12y = 12$

$4x + 12(2) = 12$

$4x + 24 = 12$

$-24 \quad -24$

$\frac{4x}{4} = \frac{-12}{4}$

$x = -3$

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Find the solution to the system of equations algebraically

$$\begin{cases} x-6y=7 \\ -x+6y=-7 \end{cases}$$

$0 = 0$

True Statement

Infinite Solutions

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Find the solution to the system of equations algebraically

$$\begin{cases} y+x=-3 \\ -y-x=5 \end{cases}$$

$0 \neq 2$

False Statement

No Solution

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