

Ch 7 Practice Test - Algebra Methods (2024)

Date _____ Period _____

ALL QUESTIONS ARE 10pts. Read instructions! Recommend checking for partial credit.

Solve each system by substitution. Checking recommended - show last step.

$$1) \begin{cases} y = -9x + 7 \\ -12x - 2y = -2 \end{cases}$$

$$\begin{aligned} \textcircled{1} \quad & -12x - 2(-9x + 7) = -2 \\ & -12x + 18x - 14 = -2 \\ & 6x - 14 = -2 \\ & \quad \quad +14 \quad \quad +14 \\ & \hline & 6x = 12 \\ & \quad \quad \div 6 \quad \quad \div 6 \\ & \boxed{x = 2} \end{aligned}$$

②

FIND Y

$$y = -9(2) + 7$$

$$\boxed{y = -11}$$

③

$$C: -11 = -11 \checkmark$$

$$C: -2 = -2 \checkmark$$

Solve each system by elimination. Checking recommended - show last step.

$$2) \begin{cases} 2x - 5y = 11 \\ -3x - 5y = -29 \end{cases} \rightarrow \begin{array}{r} 2x - 5y = 11 \\ -1(-3x - 5y = -29) \rightarrow 3x + 5y = 29 \\ \hline 5x = 40 \\ \quad \div 5 \quad \div 5 \\ \boxed{x = 8} \end{array}$$

FIND Y:

$$\begin{array}{r} 2(8) - 5y = 11 \\ -16 \quad \quad -16 \\ \hline -5y = -5 \\ \quad \quad \div -5 \quad \div -5 \\ \boxed{y = 1} \end{array}$$

$$3) \begin{cases} 8x + 10y = 16 \\ -9x - 10y = -3 \end{cases} \rightarrow \begin{array}{r} 8x + 10y = 16 \\ -9x - 10y = -3 \\ \hline -x = 13 \\ \quad \quad \div -1 \quad \div -1 \\ \boxed{x = -13} \end{array}$$

FIND Y:

$$\begin{array}{r} 8(-13) + 10y = 16 \\ +104 \quad \quad +104 \\ \hline 10y = 120 \\ \quad \quad \div 10 \quad \div 10 \\ \boxed{y = 12} \end{array}$$

Solve the system using either the substitution or elimination method.

$$\begin{array}{r}
 8) \quad 6x + 6y = 12 \rightarrow 6x + 6y = 12 \downarrow + \\
 -2(3x - 9y = -18) \rightarrow -6x + 18y = 36 \downarrow \\
 \hline
 24y = 48 \\
 \frac{24}{24} \quad \frac{48}{24} \\
 \hline
 y = 2
 \end{array}$$

FIND X:

$$\begin{array}{r}
 6x + 6(2) = 12 \\
 6x + 12 = 12 \\
 -12 \quad -12 \\
 \hline
 6x = 0 \\
 \frac{6}{6} \quad \frac{0}{6} \\
 \hline
 x = 0
 \end{array}$$

$$\begin{array}{r}
 9) \quad -6x - 2y = 14 \\
 y = -3x - 7
 \end{array}$$

$$\begin{array}{r}
 -6x - 2(-3x - 7) = 14 \\
 -6x + 6x + 14 = 14 \\
 14 = 14 \text{ (T)}
 \end{array}$$

INFINITE SOLUTIONS

$$\begin{array}{r}
 10) \quad 10x + 4y = 16 \rightarrow 10x + 4y = 16 \downarrow \\
 -2(5x + 2y = 8) \rightarrow -10x - 4y = -16 \downarrow \\
 \hline
 0 = 0 \checkmark
 \end{array}$$

INFINITE SOLUTIONS

$$\begin{array}{r}
 11) \quad y = 4x + 28 \\
 -4x - 6y = 28
 \end{array}$$

$$-4x - 6(4x + 28) = 28$$

$$-4x - 24x - 168 = 28$$

$$-28x - 168 = 28$$

$$\begin{array}{r}
 +168 \quad +168 \\
 \hline
 -28x = 196 \\
 \frac{-28}{-28} \quad \frac{196}{-28} \\
 \hline
 x = -7
 \end{array}$$

$$x = -7$$

FIND Y:

$$y = 4(-7) + 28$$

$$y = 0$$

- 13) The county fair is a popular field trip destination. This year the senior class at High School A and the senior class at High School B both planned trips there. The senior class at High School A rented and filled 6 vans and 6 buses with 258 students. High School B rented and filled 12 vans and 14 buses with 586 students. Every van had the same number of students in it as did the buses. Find the number of students in each van and in each bus.

**Key Information:

HS A: 6 vans, 6 buses, 258 students

HS B: 12 vans, 14 buses, 586 students

Define variables:

X = # students in a van (units are #)

Y = # students in a bus

Define system:

$$\text{EQ1: } 2(6x + 6y = 258) \rightarrow -12x - 12y = -516$$

$$\text{EQ2: } 12x + 14y = 586 \rightarrow 12x + 14y = 586$$

Solve the system:

$$\frac{12y = 70}{2} = \frac{70}{2}$$

$$y = 35$$

FIND X

$$6x + 6(35) = 258$$

$$6x + 210 = 258$$

$$\frac{-210 \quad -210}{\hline}$$

$$\frac{6x = 48}{6} = \frac{48}{6}$$

$$x = 8$$

Answer (in words):

The vans hold 8 students and buses hold 35 students.