

AA PREP: SYSTEMS OF LINEAR EQUATIONS—WORKSHEET #2

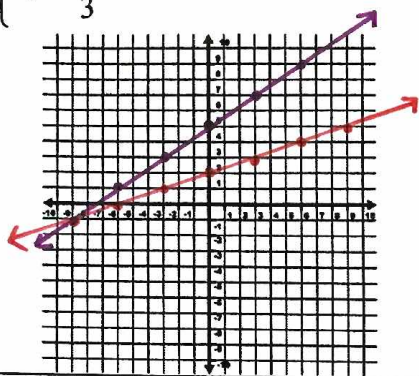
KEY

Solve each system using the specified method. Each system may have one solution, no solution, or infinitely many solutions.

1. Solve by graphing.

$$\begin{cases} y = \frac{1}{3}x + 2 \\ y = \frac{2}{3}x + 5 \end{cases}$$

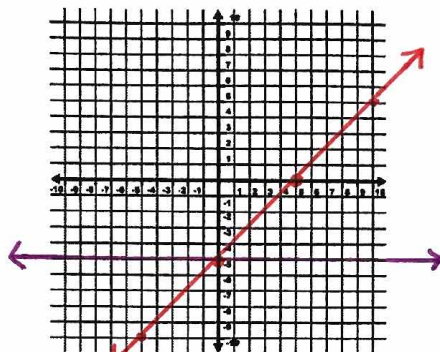
(-9, -1)



2. Solve by graphing.

$$\begin{cases} 4x - 4y = 20 \\ y = -5 \end{cases}$$

(0, -5)



3. Solve by substitution.

$$\begin{cases} y = 7x + 13 \\ -21x + 3y = 39 \end{cases}$$

$$\begin{aligned} -21x + 3(7x + 13) &= 39 \\ -21x + 21x + 39 &= 39 \\ 39 &= 39 \\ \text{TRUE!} \end{aligned}$$

SAME
LINE

INFINITELY
MANY
SOLUTIONS

4. Solve by substitution.

$$\begin{cases} 15x - 5y = -20 \\ 3x - y = -4 \end{cases}$$

$$\begin{aligned} -3x \quad -3x \\ \hline -y &= \frac{-3x - 4}{-1} \\ y &= 3x + 4 \end{aligned}$$

SAME
LINE

INFINITELY
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SOLUTIONS

$$\begin{aligned} 15x - 5(3x + 4) &= -20 \\ 15x - 15x - 20 &= -20 \\ -20 &= -20 \\ \text{TRUE!} \end{aligned}$$

5. Solve by elimination.

$$\begin{cases} 2(9x - 15y) = (24)^2 \\ -3(6x - 10y) = (-16)^{-3} \end{cases}$$

PARALLEL
LINES

NO SOLUTION

$$\begin{aligned} \oplus \downarrow \\ \begin{aligned} 18x - 30y &= 48 \\ -18x + 30y &= 48 \\ \hline 0 &= 96 \\ \text{FALSE!} \end{aligned} \end{aligned}$$

6. Solve by elimination.

$$\begin{cases} 2(-7x + 7y) = (1)^2 \\ 7(2x - 2y) = (-18)^7 \end{cases}$$

PARALLEL
LINES

NO SOLUTION

$$\begin{aligned} \oplus \downarrow \\ \begin{aligned} -14x + 14y &= 2 \\ 14x - 14y &= -126 \\ \hline 0 &= -124 \\ \text{FALSE!} \end{aligned} \end{aligned}$$

7. Solve using any method.

$$\begin{cases} 3y + 4x = 3 \\ (x + 3y) = (-6) - 1 \end{cases}$$

$$\begin{aligned} 3y + 4(3) &= 3 \\ 3y + 12 &= 3 \\ -12 \quad -12 \\ \hline 3y &= -9 \\ \frac{3}{3}y &= \frac{-9}{3} \\ y &= -3 \end{aligned}$$

(3, -3)

$$\begin{aligned} \oplus \downarrow \\ \begin{aligned} 4x + 3y &= 3 \\ -x - 3y &= 6 \\ \hline \frac{5}{2}x &= 9 \\ x &= 3 \end{aligned} \end{aligned}$$

8. Solve using any method.

$$\begin{cases} 3x + 5y = 25 \\ -3(x - 2y) = (-6) - 3 \end{cases}$$

$$x - 2\left(\frac{43}{11}\right) = -6$$

$$\begin{aligned} x - \frac{86}{11} &= -6 \\ + \frac{86}{11} \quad + \frac{86}{11} \\ \hline x &= -6 + \frac{86}{11} \\ x &= \frac{-66}{11} + \frac{86}{11} \\ x &= \frac{20}{11} = 1\frac{9}{11} \end{aligned}$$

(1 $\frac{9}{11}$, 3 $\frac{10}{11}$)

$$\begin{aligned} \oplus \downarrow \\ \begin{aligned} 3x + 5y &= 25 \\ -3x + 6y &= 18 \\ \hline 11y &= 43 \\ y &= 3\frac{10}{11} \end{aligned} \end{aligned}$$