

3.4 Solving Systems of Equations by Substitution

Name _____

Solve by substitution.

1.
$$\begin{cases} y = 2x - 3 \\ 3x + y = 7 \end{cases}$$

2.
$$\begin{cases} y = 3x + 1 \\ 4x + 2y = -8 \end{cases}$$

3.
$$\begin{cases} x = 2y + 5 \\ x - 3y = 7 \end{cases}$$

4.
$$\begin{cases} y = 2x - 3 \\ 2x - 3y = -3 \end{cases}$$

Answers: 1. $\{(2, 1)\}$; 3. $\{(1, -2)\}$

Solve by substitution.

5.
$$\begin{cases} 5x + y = -5 \\ y = 3x - 1 \end{cases}$$

6.
$$\begin{cases} 3x - 4y = 10 \\ x = -2y + 5 \end{cases}$$

7.
$$\begin{cases} -3x + 2y = -7 \\ x + 2y = 7 \end{cases}$$

8.
$$\begin{cases} x + 2y = -3 \\ 2x - y = -4 \end{cases}$$

Answers: 5. $\left\{\left(-\frac{1}{2}, -\frac{5}{2}\right)\right\}$; 7. $\left\{\left(\frac{7}{2}, \frac{7}{4}\right)\right\}$

Solve by substitution.

9.
$$\begin{cases} x = 2y + 6 \\ -2x + 4y = -1 \end{cases}$$

10.
$$\begin{cases} -x + 3y = -18 \\ 2x - 6y = 9 \end{cases}$$

11.
$$\begin{cases} 4x - y = 2 \\ 2y + 4 = 8x \end{cases}$$

12.
$$\begin{cases} 6x - y = -8 \\ -9x + \frac{3}{2}y = 12 \end{cases}$$

Answers: 9. \emptyset ; 11. $\{(x, y) \mid 4x - y = 2\}$