Name Answers Date

5.2 Solving Systems of Linear Equations (Substitution Method)

Tell which equation you would choose to solve for one of the variables when solving the system by substitution. Explain your reasoning.

1. $\frac{1}{5}x + y = 8$

$4x - 3y = 1$

I would choose this one, because it is easy to isolate the variable.

2. $3x - 7y = 12$

$3x - 12y = 6$

I would choose this one because I can isolate x after dividing everything by 3.

Solve the system of linear equations by substitution. Check your solution.

3. $y = x + 3$

$y = 5x - 5$

$x + 3 = 5x - 5$

$-x \quad -x$

$3 = 4x - 5$

$+5 \quad +5$

$\frac{8}{4} = \frac{4x}{4}$

$2 = x$

$y = 5$

Solution: (2 , 5)

Check solution:

4. $x = 5y + 2$

$x - 4y = 5$

$5y + 2 - 4y = 5$

$y + 2 = 5$

$-2 \quad -2$

$y = 3$

$x = 17$

Solution: (17 , 3)

Check solution:

Solve the system of linear equations by substitution. Check your solution.

5. $x - y = 9$
$2x + 5y = 4$

$x = y + 9$

$2(y+9) + 5y = 4$

$2y + 18 + 5y = 4$

$7y + 18 = 4$

$-18 \quad -18$

$\frac{7y}{7} = \frac{-14}{7}$

$y = -2$ $\quad x = 7$

Solution: (7 , -2)

Check solution:

6. $2x + 3y = 25$
$4x - y = 15$

$-y = -4x + 15$

$y = 4x - 15$

$2x + 3(4x - 15) = 25$

$2x + 12x - 45 = 25$

$14x - 45 = 25$

$+45 \quad +45$

$\frac{14x}{14} = \frac{70}{14}$

$x = 5$ $\quad y = 5$

Solution: (5 , 5)

Check solution:

7. $3x - 6y = 12$
$4x + 3y = -6$

$\frac{3x}{3} = \frac{6y + 12}{3}$

$x = 2y + 4$

$4(2y + 4) + 3y = -6$

$8y + 16 + 3y = -6$

$11y + 16 = -6$

$-16 \quad -16$

$\frac{11y}{11} = \frac{-22}{11}$

$y = -2$ $\quad x = 0$

Solution: (0 , -2)

Check solution: