

Solving Systems by Substitution

NOTES

1)  $y = 20$

$y = 5x - 10$

Optional

$$\begin{array}{r|l} 20 = 5x - 10 & \\ +10 & +10 \end{array}$$

$$\begin{array}{r|l} 30 = 5x & \\ \hline \frac{30}{5} = \frac{5x}{5} & \\ 6 = x & \end{array}$$

Solution:  $(6, 20)$

Check solutions

$y = 20$   
 $20 = 20$   
✓

$y = 5x - 10$   
 $20 = 5 \cdot 6 - 10$   
 $20 = 30 - 10$   
✓

2)  $y = 5x$

$y = 2x + 9$

$y = 5 \cdot 3$   
 $y = 15$

$$\begin{array}{r|l} 5x = 2x + 9 & \\ -2x & -2x \end{array}$$

$$\begin{array}{r|l} 3x = 9 & \\ \hline \frac{3x}{3} = \frac{9}{3} & \\ x = 3 & \end{array}$$

Solution:  $(3, 15)$

Check solutions

$y = 5x$   
 $15 = 5 \cdot 3$   
✓

$y = 2x + 9$   
 $15 = 2 \cdot 3 + 9$   
 $15 = 6 + 9$   
✓

3)  $y = x + 5$

$y = 2x - 12$

$y = 17 + 5$   
 $y = 22$

$$\begin{array}{r|l} x + 5 = 2x - 12 & \\ -x & -1x \end{array}$$

$$\begin{array}{r|l} 5 = x - 12 & \\ +12 & +12 \end{array}$$

$$\begin{array}{r|l} 17 = x & \end{array}$$

Solution:  $(17, 22)$

Check solutions

$y = x + 5$   
 $22 = 17 + 5$   
✓

$y = 2x - 12$   
 $22 = 2 \cdot 17 - 12$   
 $22 = 34 - 12$   
✓

Solving Systems by Substitution...

- 1) Substitute to make one equation with one variable.
- 2) Solve the equation by UNDOING the order of operations.
- 3) Substitute your solution back in for your known variable to calculate the second value.
- 4) Write your solution as a coordinate point.
- 5) Check your solution by substituting your solution back into both equations.