

Name: Key

Class:

Topic:

Date:

Main Ideas/Questions	Notes
<p>WHAT IS IT?</p>	
<p>STEPS TO SOLVE</p>	<p>Step 1: Solve one equation for <u>X</u> or <u>Y</u>.</p> <p>Step 2: <u>Substitute</u> this expression into the other equation and <u>solve</u> for the variable.</p> <p>Step 3: <u>Substitute</u> your answer into the revised equation from Step 1 and <u>solve</u> for the other variable.</p>
<p>EXAMPLES</p> <p>SOLVE THE FOLLOWING SYSTEMS USING SUBSTITUTION</p> <p>ANSWERS:</p> <ol style="list-style-type: none"> <u>(-1, -6)</u> <u>(-7, 2)</u> <u>(3, -1)</u> <u>(2, 5)</u> 	<p>1. $y = 6x$ $2x + 3y = -20$ $2x + 3(6x) = -20$ $2x + 18x = -20$ $\frac{20x}{20} = \frac{-20}{20}$ $x = -1$</p> <p>$y = 6(-1)$ $y = -6$ <u>(-1, -6)</u></p> <hr/> <p>2. $y = x + 9$ $3x + 8y = -5$ $3x + 8(x + 9) = -5$ $3x + 8x + 72 = -5$ $11x + 72 = -5$ $\frac{11x}{11} = \frac{-77}{11}$ $x = -7$</p> <p>$y = -7 + 9$ $y = 2$ <u>(-7, 2)</u></p> <hr/> <p>3. $x = 4y + 7$ $2x - 6y = 12$ $2(4y + 7) - 6y = 12$ $8y + 14 - 6y = 12$ $2y + 14 = 12$ $\frac{2y}{2} = \frac{-2}{2}$ $y = -1$</p> <p>$x = 4(-1) + 7$ $x = -4 + 7$ $x = 3$ <u>(3, -1)</u></p> <hr/> <p>4. $2x - 3y = -11$ $2x + y = 9$ $-2x \quad -2x$ $y = -2x + 9$</p> <p>$2x - 3(-2x + 9) = -11$ $2x + 6x - 27 = -11$ $8x - 27 = -11$ $\frac{8x}{8} = \frac{16}{8}$ $x = 2$</p> <p>$y = -2(2) + 9$ $y = -4 + 9$ $y = 5$ <u>(2, 5)</u></p>

ANSWERS:

- 5. (2, -6)
- 6. ∅
- 7. (1, 4)
- 8. (8, -2)
- 9. (-1, 5)
- 10. ∞
- 11. (-2, -9)
- 12. (-2, 0)

5. $2x + y = -2 \rightarrow 2x + y = -2$ $5x + 3(-2x - 2) = -8$ $y = -2(2) - 2$
 $5x + 3y = -8$ $5x - 6x - 6 = -8$ $y = -4 - 2$
 $y = -2x - 2$ $-x - 6 = -8$ $y = -6$
 $x = 2$ $x = 2$ $(2, -6)$

6. $x + 5y = 4 \rightarrow x + 5y = 4$ $3(-5y + 4) + 15x = -1$
 $3x + 15y = -1$ $-15y + 12 + 15x = -1$
 $x = -5y + 4$ $15x = -13$
 \emptyset

7. $y = 4x$ $x + 4x = 5$ $y = 4(1)$
 $x + y = 5$ $5x = 5$ $y = 4$
 $x = 1$ $(1, 4)$

8. $x = 4y$ $3(-4y) + 2y = 20$ $x = -4(-2)$
 $3x + 2y = 20$ $-12y + 2y = 20$ $x = 8$
 $-10y = 20$ $y = -2$ $(8, -2)$

9. $y = 3x + 8$ $5x + 2(3x + 8) = 5$ $y = 3(-1) + 8$
 $5x + 2y = 5$ $5x + 6x + 16 = 5$ $y = -3 + 8$
 $11x + 16 = 5$ $11x = -11$ $y = 5$
 $x = -1$ $(-1, 5)$

10. $6x + 3y = 54$ $6x + 3(-2x + 18) = 54$
 $2x + y = 18$ $6x - 6x + 54 = 54$
 $y = -2x + 18$ $54 = 54$ ∞

11. $y = 4x - 1$ $2x - 5 = 4x - 1$ $y = 2(-2) - 5$
 $y = 2x - 5$ $-5 = 2x - 1$ $y = -4 - 5$
 $-4 = 2x$ $x = -2$ $y = -9$
 $(-2, -9)$

12. $x - 3y = -2 \rightarrow x - 3y = -2$ $10(3y - 2) + 8y = -20$
 $10x + 8y = -20$ $30y - 20 + 8y = -20$
 $x = 3y - 2$ $38y - 20 = -20$
 $38y = 0$
 $y = 0$

On
Over

$x = -2$ $(-2, 0)$