

# 1.4 Elimination GUIDED NOTES

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| Name:  | Date:  |
| Topic: | Class: |

| Main Ideas/Questions | Notes/Examples  |
|----------------------|---|
| Solve by Elimination | ① LINE UP the equations.  |
|                      | ② MULTIPLY one or both equations by a number to result in a variable with the same coefficient. |
|                      | ③ ADD or SUBTRACT the equations to eliminate this variable.                                     |
|                      | ④ SOLVE for the remaining variable.   |
|                      | ⑤ SUBSTITUTE your answer from step 4 into either original equation to find the other variable.  |

**Directions:** Solve each system of equations below by elimination. Identify the solution.

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| <p>1. <math>x + 7y = 17</math><br/> <math>-1(x - y = -7)</math></p> $\begin{array}{r} x + 7y = 17 \\ -x + y = 7 \\ \hline 8y = 24 \quad y = 3 \end{array}$ <p><math>x - 3 = -7</math><br/> <math>x = -4</math></p> <p><b><math>(-4, 3)</math></b></p> | <p>2. <math>3x + 2y = 22</math><br/> <math>+ 5x - 2y = 42</math></p> $\begin{array}{r} 3x + 2y = 22 \\ + 5x - 2y = 42 \\ \hline 8x = 64 \\ x = 8 \end{array}$ <p><math>24 + 2y = 22</math><br/> <math>2y = -2</math><br/> <math>y = -1</math></p> <p><b><math>(8, -1)</math></b></p> |
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| <p>3. <math>4x - 9y = -42</math><br/> <math>-4(x + 5y = 4)</math></p> $\begin{array}{r} 4x - 9y = -42 \\ -4x - 20y = -16 \\ \hline -29y = -58 \\ y = 2 \end{array}$ <p><math>x + 10 = 4</math><br/> <math>x = -6</math></p> <p><b><math>(-6, 2)</math></b></p> | <p>4. <math>7x - 6y = -53</math><br/> <math>(2x - 3y = -13) \cdot 2</math></p> $\begin{array}{r} 7x - 6y = -53 \\ -4x + 6y = 26 \\ \hline 3x = -27 \\ x = -9 \end{array}$ <p><math>-18 - 3y = -13</math><br/> <math>-3y = 5</math><br/> <math>y = -5/3</math></p> <p><b><math>(-9, -5/3)</math></b></p> |
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| <p>5. <math>5x + 3y = -7</math><br/> <math>2x + 7y = 3</math></p> | <p>6. <math>3x - 9y = 9</math><br/> <math>4x - 12y = 36</math></p> |
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If all variables cancel:  
 - true statement = infinite solutions  
 - untrue statement = no solution

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