

3.2 Solve Linear Systems Algebraically

Substitution Method	Elimination Method
<ol style="list-style-type: none"> 1. Solve one equation for one variable. (look for a coefficient of 1) 2. Substitute this expression into the OTHER equation. 3. Solve for the remaining variable. 4. Substitute this value into EITHER equation to solve for the remaining variable. 5. State the final answer. <ul style="list-style-type: none"> ➤ Ordered pair (alphabetically) ➤ Slope-intercept form ➤ No Solution 	<ol style="list-style-type: none"> 1. Pick a variable to eliminate. 2. GOAL: to create opposite terms <ul style="list-style-type: none"> ➤ May only have to change one equation ➤ May have to change both equations by multiplying each by the other's coefficient 3. ADD the 2 equations. One variable should be eliminated. 4. Solve for the remaining variable. 5. Substitute this value into EITHER equation to solve for the remaining variable. 6. State the final answer. <ul style="list-style-type: none"> ➤ Ordered pair (alphabetically) ➤ Slope-intercept form ➤ No Solution

Substitution Examples:

<ol style="list-style-type: none"> 1. $3x - 2y = -3$ $3x + y = 3$ 	<ol style="list-style-type: none"> 2. $3x - 2y = 10$ $x + 4y = -6$
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Elimination Examples:

3. $2x + 3y = 2$
 $x - 3y = -17$

4. $5x + 3y = 0$
 $4x + 5y = 13$

Special Cases:

5. $2x + 6y = 16$
 $\frac{2}{3}x + 2y = 18$

6. $\frac{1}{2}x - \frac{2}{3}y = 2$
 $\frac{4}{3}x - \frac{16}{9}y = \frac{16}{3}$