Systems of Linear Equations.

A system is 2 or more linear equations with the same variables.

\[ y = 3x - 2 \]
\[ y = -x + 7 \]

A unique case \[ 2x - 3y + 5 < 0 \]

Sketch the graph of \[ y = -2x + 2 \] and \[ y = x - 7 \] on the same axes.

\[ y = -2x + 2 \]
\[ -4 = -2(3) + 2 \]
\[ = -6 + 2 \]
\[ \sqrt{\text{y}} = 4 \]

\[ y = x - 7 \]
\[ -4 = 3 - 7 \]
\[ \sqrt{\text{y}} = 4 \]

\[ \text{the solution to a linear system is the intersection point.} \]
\[ (3, -4) \]

Check by substituting into each equation. \((3, -4)\) satisfies the equation.

Solve by graphing, then check: \[ y = \frac{1}{2}x - 6 \]
\[ y = \frac{3}{2}x - 2 \]

Check:
\[ -8 = \frac{1}{2}(-4) - 6 \]
\[ = -2 - 6 \]
\[ \checkmark \]

\[ -8 = \frac{3}{2}(-4) - 2 \]
\[ = -6 - 2 \]
\[ \checkmark \]
\[3x - 6y + 12 = 0\]

Solve for \( y \).

\[
\begin{align*}
-6y &= -3x - 12 \\
\frac{-6y}{-6} &= \frac{-3x - 12}{-6} \\
y &= \frac{1}{2} x + 2
\end{align*}
\]