

Solving a System of Equations by...
Substitution

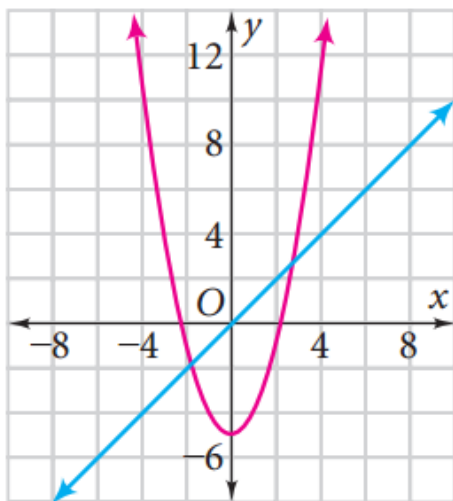
$3x + 2y = 10$ and $2x - y = 9$

Step 1: Rewrite each equation into Slope-Intercept form.
 $3x + 2y = 10$ becomes $y = -\frac{3}{2}x + 5$
 $2x - y = 9$ becomes $y = 2x - 9$

Step 2: Set the equations equal to each other and solve for x
 $-\frac{3}{2}x + 5 = 2x - 9$ "Letters to the Left" "Numbers to the Right"
 $-\frac{3}{2}x + 5 = 2x - 9$
 $-\frac{3}{2}x + 5 - 2x = 2x - 9 - 2x$
 $-\frac{3}{2}x + 5 = -9$
 $-\frac{3}{2}x + 5 - 5 = -9 - 5$
 $-\frac{3}{2}x = -14$
 $x = -14 \div -\frac{3}{2}$
 $x = 4$ ← the x-value of the Solution

Step 3: Plug in the x-value back in to the ORIGINAL Equations.
 $3(4) + 2y = 10$ and $2(4) - y = 9$
 $12 + 2y = 10$ and $8 - y = 9$
 $2y = -2$ and $-y = 1$
 $y = -1$ and $y = -1$

Solution: $(4, -1)$
 Some Anxious Do You have the Correct x and y



$$\begin{aligned}y &= x^2 + 1 \\y &= x + 1\end{aligned}$$

$$\begin{aligned}y &= x^2 + 2x + 5 \\y &= -2x + 1\end{aligned}$$