Systems of Equations: Lesson 2

Substitution: Notes

Name: _____

Solve the system of equations: $\begin{cases} y = -x + 2 \\ y = 3x + 10 \end{cases}$

$-x+2=3x+10$

$+x \quad +x$

$2=4x+10$

$-10 \quad -10$

$-8=4x$

$\frac{-8}{4}=\frac{4x}{4}$ $\quad x=-2$

$y=-x+2$

$y=-(-2)+2$

$y=2+2$

$y=4$

$(-2,4)$

Solve the system of equations: $\begin{cases} x = 3y + 8 \\ -2x - 5y = -5 \end{cases}$

$-2(3y+8)-5y=-5$

$-6y-16-5y=-5$

$-11y-16=-5$

$+16 \quad +16$

$-11y=11$

$\frac{-11y}{-11}=\frac{11}{-11}$ $\quad y=-1$

$x=3y+8$

$x=3(-1)+8$

$x=-3+8$

$x=5$

$(5,-1)$

Steps to solve systems by substitution:

1. Solve one of the equations for either variable if necessary—pick a variable with a coefficient of 1 or -1.
2. Put that equation into the other equation—put it in parentheses.
3. Solve for the variable in your new equation.
4. Solve for the other variable.

Solve by substitution: $\begin{cases} 4x-5y=2 \\ 2x-y=4 \end{cases}$