Principles of Algebra Name/Date Clee / Today

ALL PROBLEMS CAN BE COMPLETED ON THIS WORKSHEET

WS 9C.2 – More Solving Systems of Equations by Elimination

#1-8, Solve each system of equations by the elimination method.

1. $\begin{cases} 5x-2y=3 \\ 5x+y=-9 \end{cases}$

$5x-2y=3 \xrightarrow{\cdot(-1)} -5x+2y=-3$

$5x+y=-9 \longrightarrow 5x+y=-9$

$3y=-12$

$y=-4$

$5x-2y=3$

$5x-2(-4)=3$

$5x+8=3$

$5x=-5$

$x=-1$

The solution is $(-1,-4)$.

2. $\begin{cases} 4x+3y=-9 \\ x+2y=-1 \end{cases}$

$4x+3y=-9 \longrightarrow 4x+3y=-9$

$x+2y=-1 \xrightarrow{\cdot(-4)} -4x-8y=4$

$-5y=-5$

$y=1$

$x+2y=-1$

$x+2(1)=-1$

$x+2=-1$

$x=-3$

The solution is $(-3,1)$.

3. $\begin{cases} 2x+y=-1 \\ 7x=5y+5 \end{cases}$

Rearrange terms.

$\begin{cases} 2x+y=-1 \xrightarrow{\cdot 5} 10x+5y=-5 \\ 7x-5y=5 \longrightarrow 7x-5y=5 \end{cases}$

$17x=0$

$x=0$

$2x+y=-1$

$2(0)+y=-1$

$y=-1$

The solution is $(0,-1)$.

4. $\begin{cases} x+5y=-13 \\ 2x-5y=-19 \end{cases}$

$3x=-32$

$x=\frac{-32}{3}$

$x+5y=-13$

$-\frac{32}{3}\cdot 3+5y\cdot 3=-13\cdot 3$

$-32+15y=-39$

$15y=-7$

$y=\frac{-7}{15}$

The solution is $\left(\frac{-32}{3},\frac{-7}{15}\right)$.

5. $\begin{cases} 4x+3y=27 \\ 3x+4y=29 \end{cases}$ $\xrightarrow{\cdot(-4)}$ $-16x-12y=-108$; $\xrightarrow{\cdot 3}$ $9x+12y=87$

$-7x = -21$

$x = 3$

$4x+3y=27$

$4(3)+3y=27$

$12+3y=27$

$3y=15$

$y=5$

The solution is $(3,5)$.

6. $\begin{cases} 2x+2y=-8 \\ 3x-3y=18 \end{cases}$ $\xrightarrow{\cdot 3}$ $6x+6y=-24$; $\xrightarrow{\cdot 2}$ $6x-6y=36$

$12x = 12$

$x = 1$

$2x+2y=-8$

$2(1)+2y=-8$

$2+2y=-8$

$2y=-10$

$y=-5$

The solution is $(1,-5)$.

7. $\begin{cases} 2x-y=-6 \\ 2x+3y=14 \end{cases}$ $\xrightarrow{\cdot 3}$ $6x-3y=-18$; $\longrightarrow$ $2x+3y=14$

$8x = -4$

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

$x = \frac{-1}{2}$

$2x+3y=14$

$2\left(\frac{-1}{2}\right)+3y=14$

$-1+3y=14$

$3y=15$

$y=5$

The solution is $\left(\frac{-1}{2}, 5\right)$.

8. $\begin{cases} -3x+4y=4 \\ 6x=8y-8 \end{cases}$

Rearrange terms.

$\begin{cases} -3x+4y=4 \xrightarrow{\cdot 2} -6x+8y=8 \\ 6x-8y=-8 \longrightarrow 6x-8y=-8 \end{cases}$

$0 = 0$

Solve for y: $-3x+4y=4$

$4y = 3x+4$

$y = \frac{3}{4}x+1$

Infinitely many solutions. All points on the line $y=\frac{3}{4}x+1$ are solutions to the system.