7.5: Solving by Elimination

(multiplication/addition)

ex.1) $2x + y = -7$

$-1(x + y = -4)$

$$\begin{array}{r} 2x + y = -7 \\ +\ -x - y = 4 \\ \hline x = -3 \end{array}$$

Solve for y:

$x + y = -4$

$-3 + y = -4$

$y = -4 + 3$

$y = -1$

2) $3x-4y=7$
$5x-6y=8$

↑ make them both the same number (one positive, one negative)

$5(3x-4y=7) \Rightarrow 15x-20y=35$
$-3(5x-6y=8) \Rightarrow -15x+18y=-24$

$-2y=11$

$\frac{-2y}{-2}=\frac{11}{-2}$ or -5.5

Solve for the other variable using either equation.

$3x-4y=7$
$3x-4(-5.5)=7$
$3x+22=7$
$3x=7-22$
$3x=-15$
$x=-5$

Intersection point $(-5,-5.5)$

3) $2x + 3y = 6$
$5x + 10y = 20$

$5(2x+3y=6) \Rightarrow 10x + 15y = 30$

$-2(5x+10y=20) \Rightarrow -10x - 20y = -40$

$-5y = -10$

$\frac{-5y}{-5} = \frac{-10}{-5}$

$y = 2$

$2x+3y=6$
$2x+3(2)=6$
$2x+6=6$
$2x=6-6$
$\frac{2x}{2} = \frac{0}{2}$
$x = 0$

$(0, 2)$

Worksheet

1. $(4,0)$
2. $(2,-1)$
3. $(2,-6)$
4. $(1,-0.5)$
5. $\left(\frac{4}{5},\frac{2}{5}\right)$
6. $(1,-1)$
7. $\left(\frac{3}{2},\frac{3}{4}\right)$ or $(1.5,0.75)$