

Name: KEY

Section 4.1b – Solving Systems by the Addition Method

Solve the systems of equation given below by using the addition method

$x - y = -5$ and $x + y = -7$

$$\begin{array}{r}
 x - y = -5 \\
 + \quad x + y = -7 \\
 \hline
 2x = -12 \\
 x = -6 \qquad \qquad (-6, -1) \\
 \text{sub in } x = -6 \\
 -6 - y = -5 \\
 -y = 1 \quad y = -1
 \end{array}$$

$2x - y = -5$ and $x + y = 8$

$$\begin{array}{r}
 2x - y = -5 \\
 + \quad x + y = 8 \\
 \hline
 3x = 3 \\
 x = 1 \\
 \text{sub in} \qquad \qquad (1, 7) \\
 1 + y = 8 \\
 y = 7
 \end{array}$$

$2x - 3y = -4$ and $3x + y = -6$

$$\begin{array}{r}
 2x - 3y = -4 \\
 (3x + y = -6) \cdot 3 \rightarrow 9x + 3y = -18 \\
 \hline
 11x = -22 \\
 x = -2 \\
 3(-2) + y = -6 \qquad (-2, 0) \\
 y = 0
 \end{array}$$

$y = -\frac{2}{3}x + 1$ and $3x + y = 15$

$$\begin{array}{r}
 3y = -2x + 3 \\
 +2x \quad +2x \\
 2x + 3y = 3 \\
 (3x + y = 15) \cdot (-3) \rightarrow -9x - 3y = -45 \\
 \hline
 -7x = -42 \\
 x = 6 \\
 y = -\frac{2}{3}(6) + 1 \\
 y = -4 + 1 \\
 y = -3 \qquad \qquad (6, -3)
 \end{array}$$