

$$\begin{aligned}
 1. \quad y &= 3x - 5 & y &= 3(-1) - 5 \\
 & & &= -3 - 5 \\
 8x + y &= -16 & & y = -8 \\
 8x + (3x - 5) &= -16 \\
 8x + 3x - 5 &= -16 & & \boxed{(-1, -8)} \\
 11x - 5 &= -16 \\
 +5 & \quad +5 \\
 \frac{11x}{11} &= \frac{-11}{11} & x &= -1
 \end{aligned}$$

$$\begin{aligned}
 2. \quad y &= -3x + 10 \\
 6x + 2y &= 20 \\
 6x + 2(-3x + 10) &= 20 \\
 \cancel{6x} - \cancel{6x} + 20 &= 20 \\
 \infty \text{ many} & \quad 20 = 20 \\
 \text{solutions} &
 \end{aligned}$$

$$\begin{aligned}
 3. \quad x + y &= 4 \\
 2x + 2y &= 7 \\
 \boxed{x} + y &= 4 \\
 -y & \quad -y \\
 x &= -y + 4 \\
 2(-y + 4) + 2y &= 7 \\
 -2y + 8 + 2y &= 7 \\
 8 &= 7 \\
 \text{no} & \\
 \text{solution} &
 \end{aligned}$$

Substitution

How to pick what to solve for?

* when $x =$ or $y =$

* when a coefficient is 1 or -1

Types of Solution

- 1 Solution $x = \#$, $y = \#$
- No Solution $4 = 10$ or $0 = 12$
- ∞ many solutions $10 = 10$
or $0 = 0$