

$$\text{Ex: } \begin{cases} 5(3x - 2y = -5) \\ 2(4x + 5y = 47) \end{cases}$$

$$\begin{array}{r} 15x - 10y = -25 \\ + \quad 8x + 10y = 94 \\ \hline 23x = 69 \\ \frac{23x}{23} = \frac{69}{23} \end{array}$$

$$x = 3$$

Consistent
+
Independent

$$(3, 7)$$

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

$$9 - 2y = -5$$

$$-2y = -14$$

$$y = 7$$

$$-16x + 2y = -2$$

$$y = 8x - 1$$

$$\frac{2y}{2} = \frac{16x - 2}{2}$$

$$y = 8x - 1$$

$$-16x + 2(8x - 1) = -2$$

$$-16x + 16x - 2 = -2$$

$$-2 = -2 \quad \text{True}$$

Infinitely many solutions

Consistent & Dependent

$$\begin{array}{r}
 x - 2y = 7 \\
 + \quad -x + 2y = 7 \\
 \hline
 0 = 14 \text{ False} \\
 \text{no solution}
 \end{array}
 \Rightarrow
 \begin{array}{l}
 2y - x = 7 \\
 2y = x + 7
 \end{array}
 \quad
 \begin{array}{l}
 y = \frac{1}{2}x + \frac{7}{2} \\
 y = \frac{1}{2}x + \frac{7}{2}
 \end{array}$$

same \uparrow
dif

Inconsistent