Substitution

Example 1:

$2x + y = -1$

$x = 2y - 13$

$2(2y-13)+y=1$

$4y-26+y=-1$

$5y-26=-1$

$+26 \quad +26$

$5y=25$

$y=5$

$x=2(5)-13$

$x=-3$

$(-3,5)$

One Solution

Substitution

Example 2:

$4x - 3y = 15$

$y = \frac{4}{3}x - 7$

$4x - 3\left(\frac{4}{3}x - 7\right) = 15$

$4x - \frac{12}{3}x + 21 = 15$

$4x - 4x + 21 = 15$

$21 = 15$

False → no solution

Substitution

Example 3:

$y = -\frac{1}{2}x + 4$

$x + 2y = 8$

$x + 2\left(-\frac{1}{2}x + 4\right) = 8$

$x + -1x + 8 = 8$

$8 = 8$

infinite