Elimination

Example 1:

$3x + y = 2$

$3(x - 2y = 10)$

$3x + y = 2$

$+ \quad -3x + 6y = -30$

$7y = -28$

$\frac{7y}{7} = \frac{-28}{7}$

$y = -4$

$3x + (-4) = 2$

$+4 \quad +4$

$3x = 6$

$\frac{3x}{3} = \frac{6}{3}$

$x = 2$

$(2, -4)$

One Solution

Elimination

Example 2:

$\times 2\,(2x + y = 6)$

$-4x - 2y = 5$

$4x + 2y = 12$

$+\ -4x - 2y = 5$

$0 = 17$

NO solution

Elimination

Example 3:

$$-x + 5y = -6$$

$$2x - 10y = 12$$

$-2x+10y=-12$

$2x-10y=12$

$0=0$

Infinitly many Solutions

$16x - 10y = 10$

$2(-8x - 6y = 6)$

$3(5x + 4y = -30)$

$-5(3x - 9y = -18)$

$16x - 10y = 10$

$-16x - 12y = 12$

$-22y = 22$

$\frac{-22y}{-22} = \frac{22}{-22}$

$y = -1 \quad x = 0$

ONE SOLUTION

$-8x - 6(-1) = 6$

$-8x + 6 = 6$

$-6 \quad -6$

$-8x = 0$