$y = 3x - 8$

| x | y |
|---|---|
| -4 | -20 |
| -1 | -11 |
| 0 | -8 |
| 2 | -2 |
| 6 | 10 |
| 4 | 4 |

$y = -\frac{1}{2}x + 6$

| x | y |
|---|---|
| -4 | 8 |
| -2 | 7 |
| 0 | 6 |
| 2 | 5 |
| 6 | 3 |
| 4 | 4 |

(4,4)

$-\frac{1}{2}$  $\frac{rise}{run}$
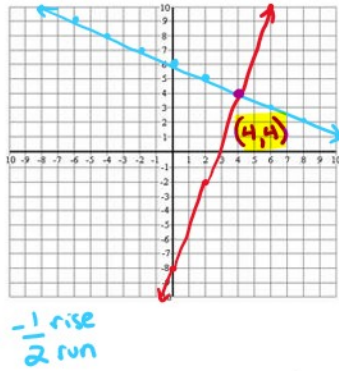
① One unique solution
(lines intersect at one point)

② No solution ⌢
(lines do not intersect)
(parallel lines)

③ Infinitely Many Solutions (IMS)
All Real Numbers (ℝ)
(same exact line)

**Substitution**
* if one or both equations are in x = or y = form

$-3 + 2x = y + 10$

$y = \frac{1}{3}x + 3$

$3 + 2x = \frac{1}{3}x + 3 + 10$

$3 + 2x = \frac{1}{3}x + 13$
$-3 \qquad -3$

$3 \cdot 2x = (\frac{1}{3}x + 10) \cdot 3$

$6x = 1x + 30$
$-1x \quad -1x$

$\frac{5x}{5} = \frac{30}{5}$

$\boxed{x = 6}$

$y = \frac{1}{3}x + 3$

$y = \frac{1}{3}(6) + 3$

$\boxed{y = 5}$

$(6,5)$

**Elimination/Combination**
* if the equations are aligned so that x's are above x's, y's are above y's, and #'s are above #'s

$(2y = 4x - 10)3 \rightarrow 6y = 12x - 30$
$+$
$(3y = 6x + 3)-2 \rightarrow -6y = -12x - 6$
_____
$5y = 10x - 7$

$5 = 5$
IMS
ℝ

$0 = 0 \quad -36$

$0 = -36$
FALSE

No Solutions ⌢

$\frac{2y}{2} = \frac{-36}{2}$

$y = -18$