Methods to solve a system of Linear Equations:

- Graphing
- Substitution
- Elimination

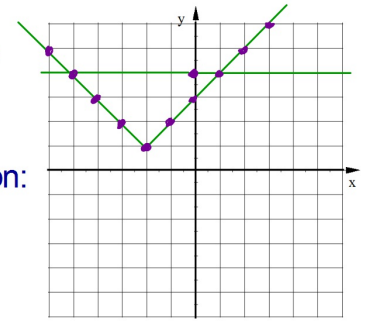
Solve. $y = 4$

$y = |x + 2| + 1$

You could solve this system by graphing

solutions are points of intersection:

$(-5, 4)$ $(1, 4)$



Solve. $y = 4$

$y = |x + 2| + 1$

Or you could solve this system by using Substitution.

$4 = |x + 2| + 1$

$-1 \quad -1$

$3 = |x + 2|$

$3 = x + 2$ $\quad -3 = x + 2$

$-2 \quad -2$ $\quad -2 \quad -2$

$1 = x$ $\quad -5 = x$

$(1, 4)$ $(-5, 4)$

Solve. $y = 2x + 3$

$y = |x + 1| - 2$

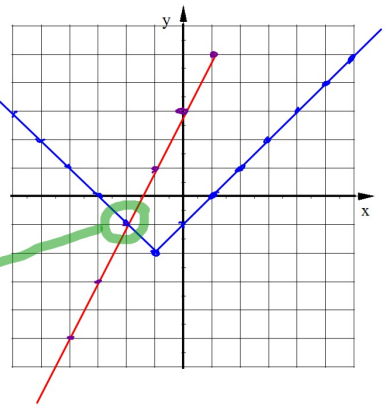
1 Left 2 down

$m = 1$ & -1

$(-2, -1)$

only one solution

If you solved by graphing you see that the graph intersect only once.



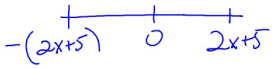
Solve. $y = 2x + 3$ → $y = |x + 1| - 2$

$2x + 3 = |x+1| - 2$

$+2 \quad +2$

$2x + 5 = |x+1|$

If you solve using Sustitution you get two solutions, but one of them is extraneous.



$x+1 = 2x+5$

$-x \quad -x$

$1 = x + 5$

$-5 \quad -5$

$x = -4$

this is an extraneous solution

it doesn't make both original equations true

$x+1 = -2x-5$

$+2x \quad +2x$

$3x + 1 = -5$

$-1 \quad -1$

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

$x = -2$

$(-2, -1)$

$y = 2(-2) + 3$

Solve. $y = x^2 + 3x - 7$

$y = -x^2 + 3x + 1$

$x^2 + 3x - 7 = -x^2 + 3x + 1$

$-3x \quad -3x$

$x^2 - 7 = -x^2 + 1$

$+x^2 \quad +x^2$

$2x^2 - 7 = 1$

$+7 \quad +7$

$\frac{2x^2}{2} = \frac{8}{2}$

$\sqrt{x^2} = \sqrt{4}$

$x = \pm 2$

$(2)^2 + 3(2) - 7$

$(2, 3)$

$(-2, -9)$

$(-2)^2 + 3(-2) - 7$