

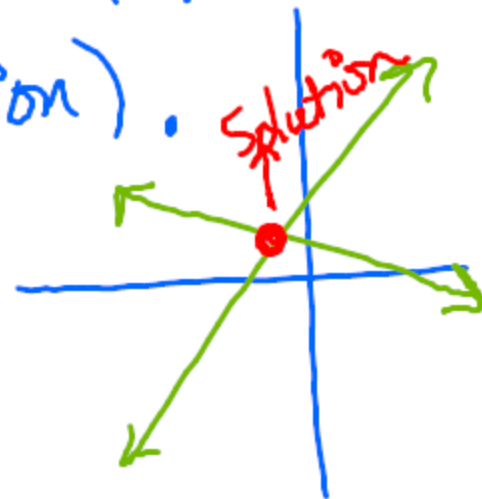
Systems of Linear Equations

A system of equations is a set of 2 or more equations with the same variables, graphed on the same coordinate plane.

↳ They can be "solved"

The solution to a system is the coordinate point(s) that are/is shared by the graphs (intersection).

The solution(s) will satisfy both equations



Ex. 1: Solve the system by graphing:

$$2x + y = 5$$

$$\begin{array}{r} -2x \\ 1 \\ -2x \end{array}$$

$$y = -x + 3$$

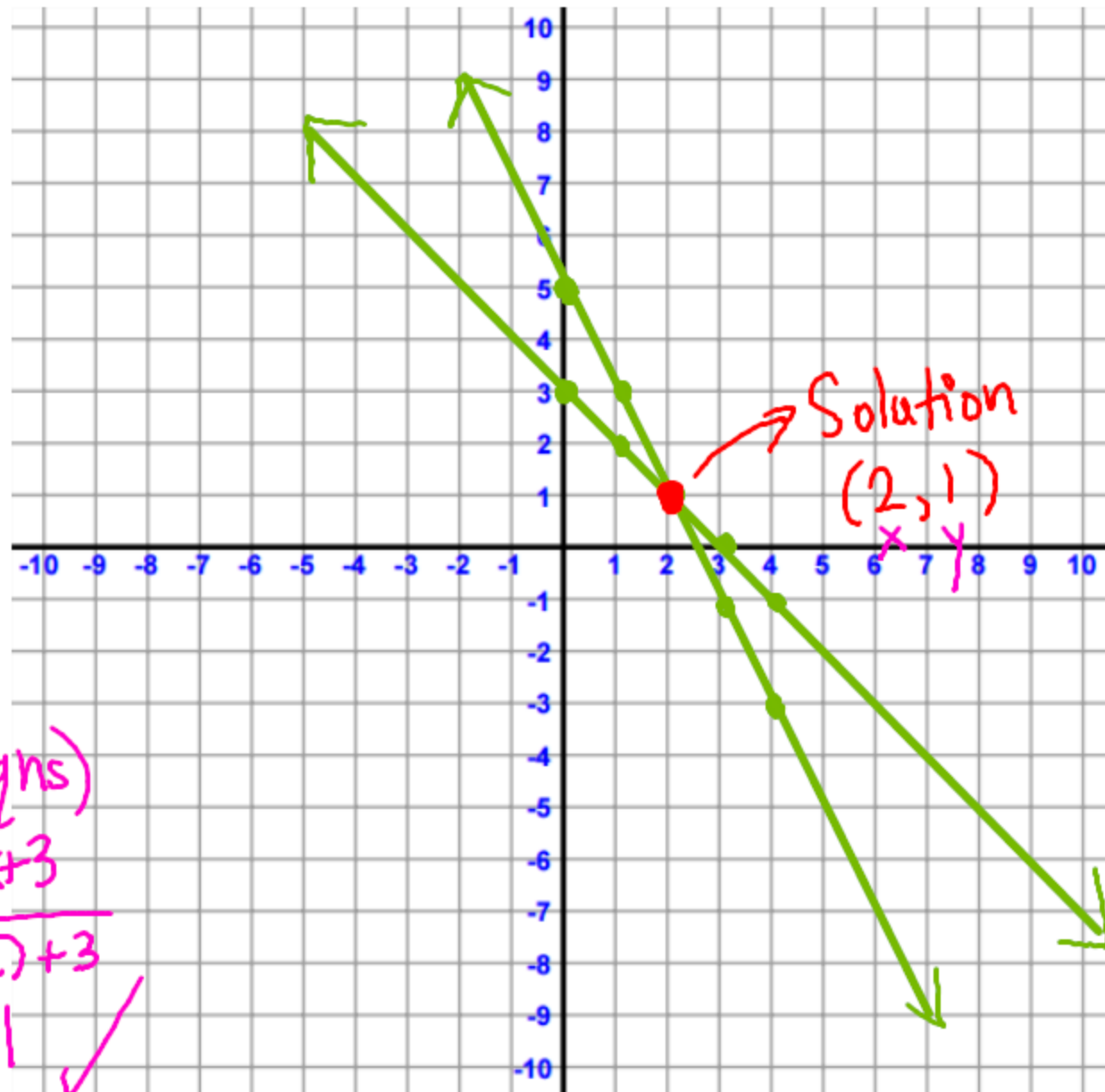
$$y = -2x + 5$$

Verify solution (use original eqns)

$$\begin{array}{r|l} 2x + y & 5 \\ \hline 2(2) + (1) & 5 \end{array}$$

$$\begin{array}{r|l} 4 + 1 & \\ \hline 5 & \neq \end{array}$$

$$\begin{array}{r|l} y & -x + 3 \\ \hline 1 & -(2) + 3 \\ & \neq 1 \end{array}$$



Ex. 2: Solve by graphing

$$x + y = -3$$

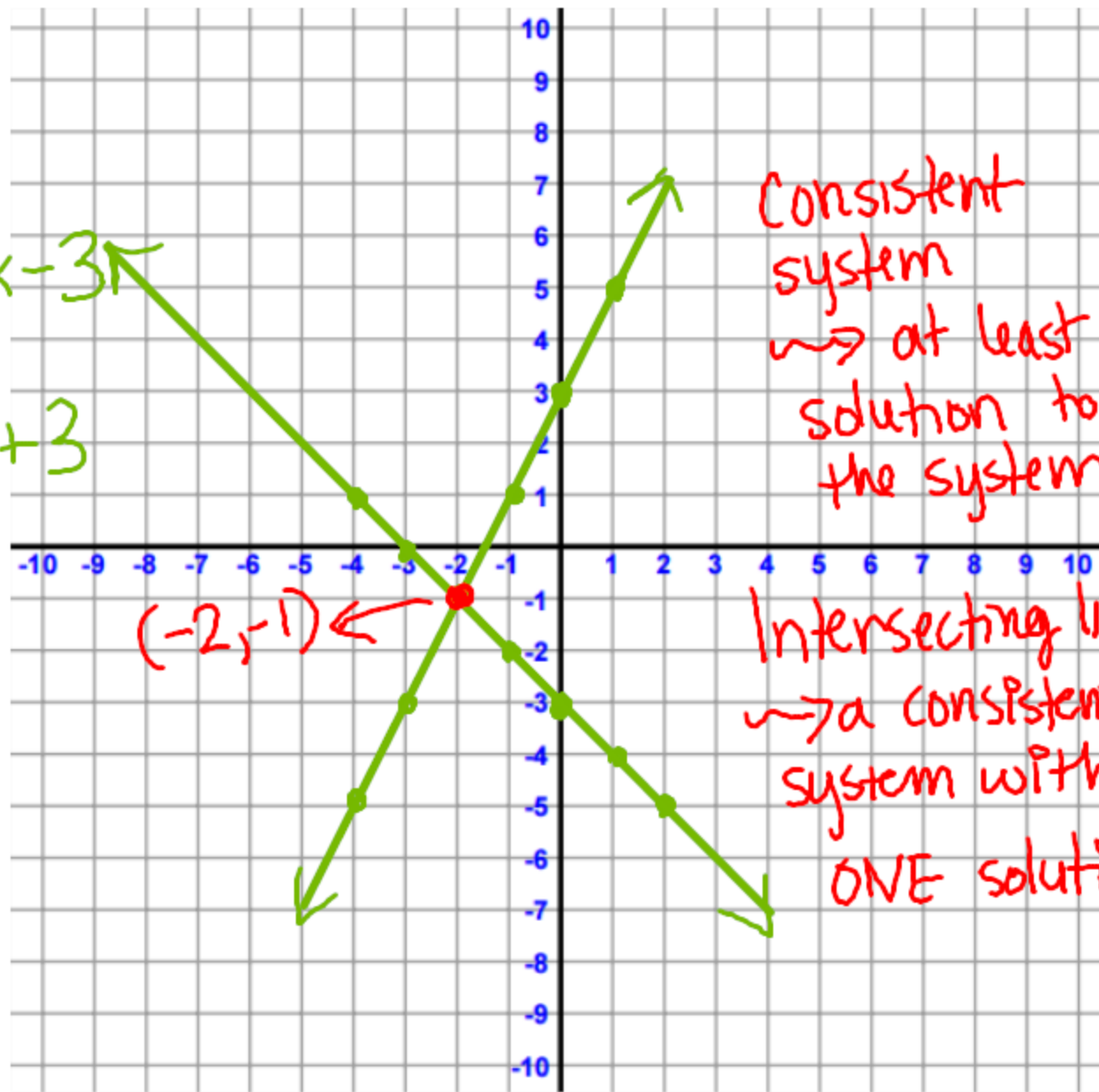
$$-2x + y = 3$$

$$y = -x - 3$$

$$y = 2x + 3$$

$$\begin{array}{r|l} x+y & -3 \\ (-2)+(-1) & -3 \\ \hline -3 & \\ \checkmark & = \end{array}$$

$$\begin{array}{r|l} -2x+y & 3 \\ -2(-2)+(-1) & 3 \\ \hline 4-1 & \\ 3 & \\ \checkmark & = \end{array}$$



Consistent system
→ at least one solution to the system

Intersecting lines
→ a consistent system with ONE solution

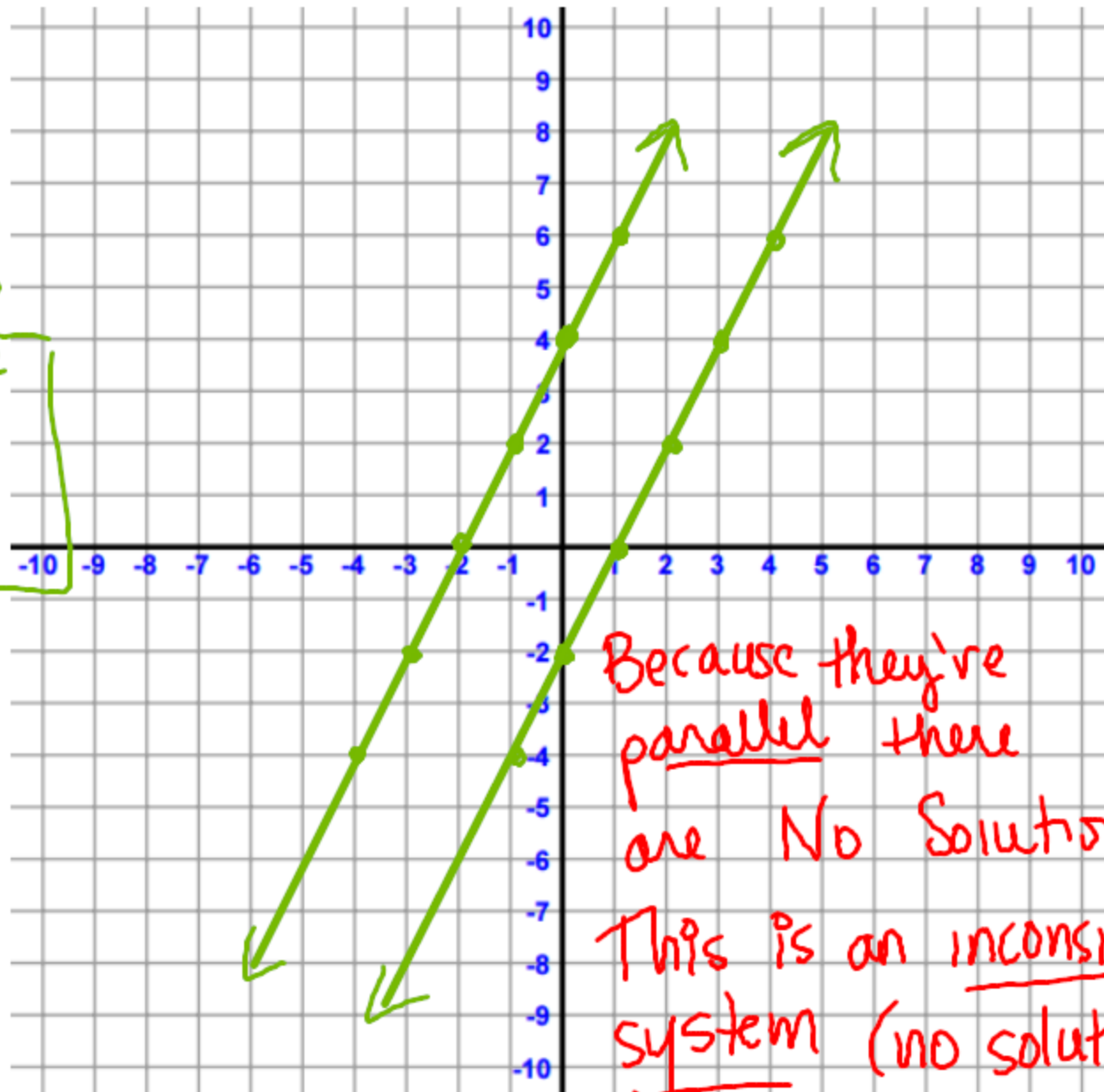
Ex. 3: Solve by graphing

$$-4x + 2y = 8 \quad 2y = 4x + 8$$

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

$$\rightarrow y = 2x + 4$$

$$\rightarrow y = 2x - 2$$



Because they're parallel there are No Solutions. This is an inconsistent system (no solution)

Ex 4: Solve by graphing

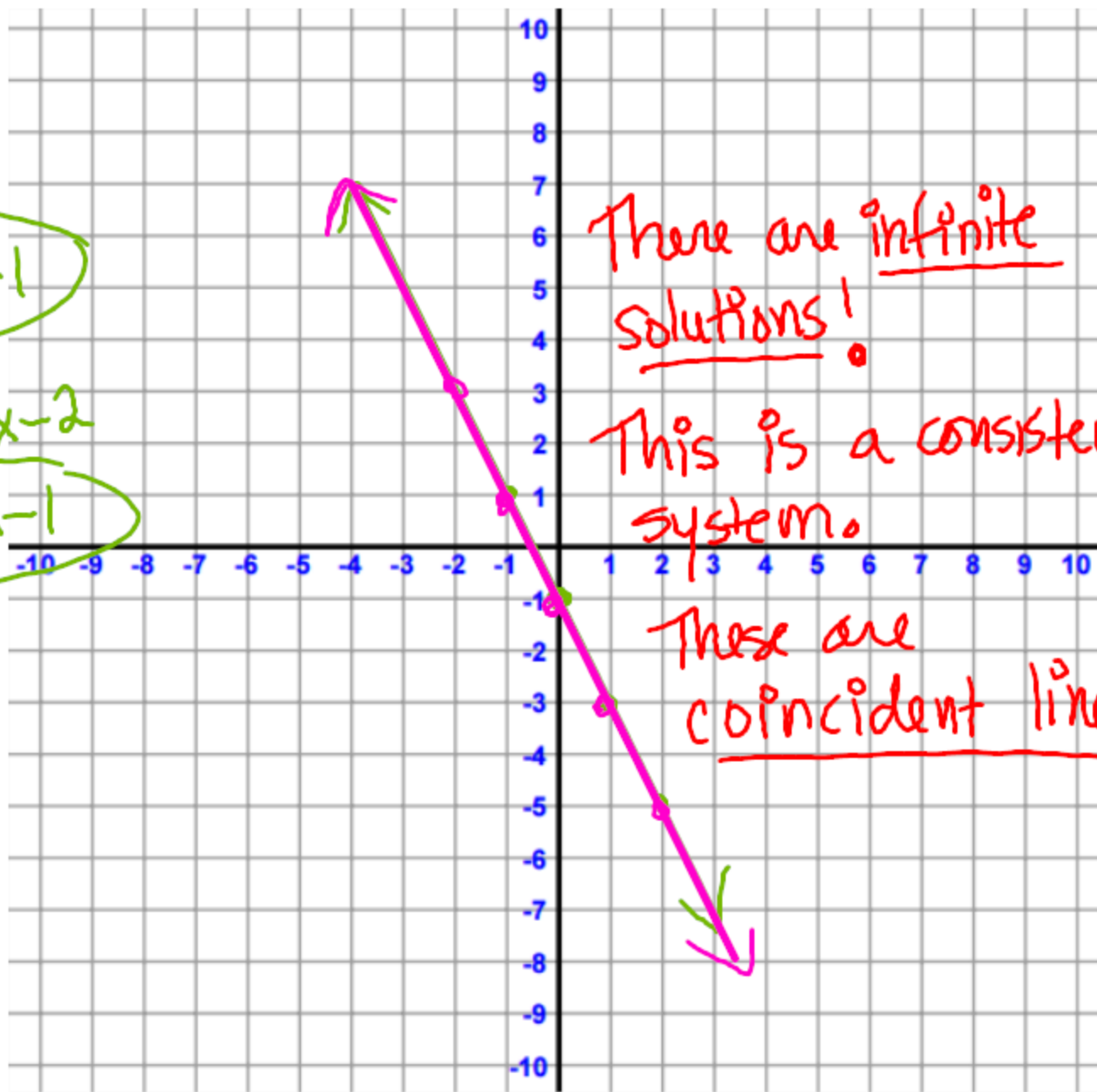
$$2x + y = -1$$

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

$$y = -2x - 1$$

$$2y = -4x - 2$$

$$y = -2x - 1$$



p. 409 #3-5