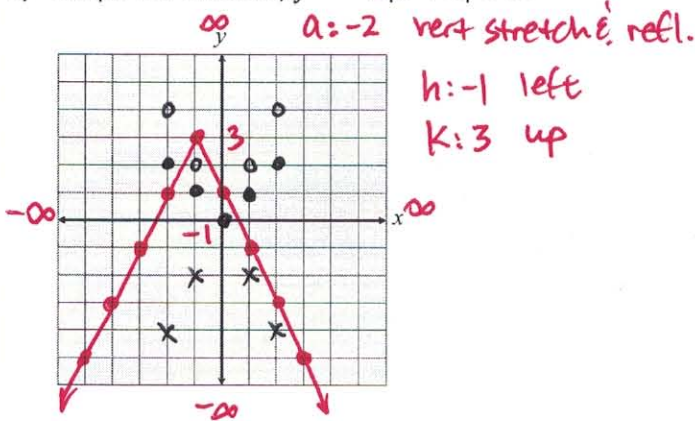


Show work for credit.

1) Graph the function, $y = -2|x + 1| + 3$.



Use **set builder** and **interval notation** for the following:

Domain: $\{x \mid \mathbb{R}\}$ $(-\infty, \infty)$

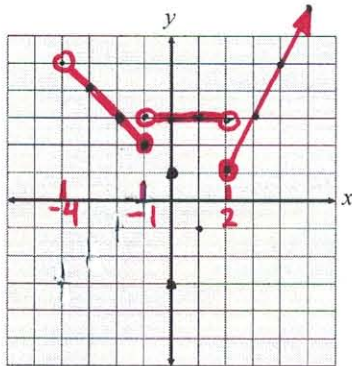
Range: $\{y \mid y \leq 3\}$ $(-\infty, 3]$

Increasing: $\{x \mid x < -1\}$ $(-\infty, -1)$

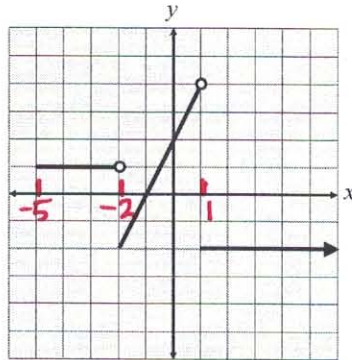
Decreasing: $\{x \mid x > -1\}$ $(-1, \infty)$

2) Graph the piecewise-defined function,

$$f(x) = \begin{cases} -x + 1, & -4 < x \leq -1 \\ 3, & -1 < x < 2 \\ 2x - 3, & x \geq 2 \end{cases}$$

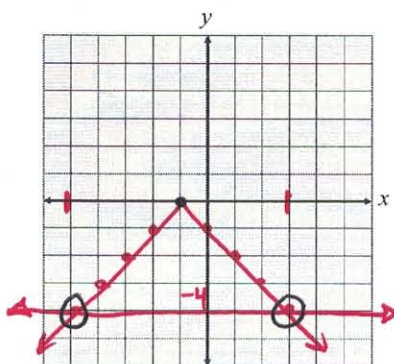


3) What rule defines the following function?



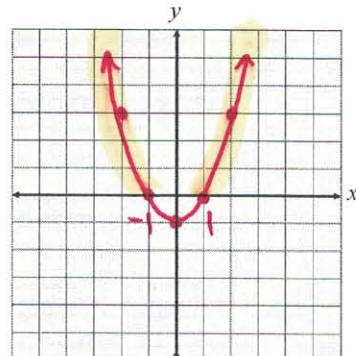
$$f(x) = \begin{cases} 1 & -5 \leq x < -2 \\ 2x + 2 & -2 \leq x < 1 \\ -2 & x \geq 1 \end{cases}$$

4) Use a graph to solve the equation, $-|x + 1| = -4$.



Answer: $x = -5, 3$

5) Use a graph to solve the inequality, $x^2 - 1 \geq 0$. pos or zero
 $k = -1$



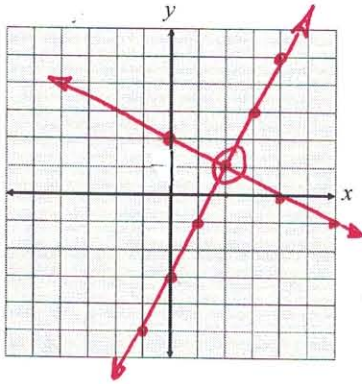
Use **set builder** and **interval notation**.

Answer: $\{x \mid x \leq -1 \text{ or } x \geq 1\}$ $(-\infty, -1] \cup [1, \infty)$

6) Solve the system of equations by graphing.

$mx+b$

$$\begin{cases} y = 2x - 3 \\ y = -\frac{1}{2}x + 2 \end{cases}$$



Answer: (2, 1)

7) Solve the system algebraically.

$$\begin{cases} x - 2y = 1 \\ -3x + y = -8 \end{cases} \begin{array}{l} \cdot 2 \\ (+) \end{array} \begin{array}{l} x - 2y = 1 \\ -6x + 2y = -16 \\ \hline -5x = -15 \\ \hline x = 3 \end{array}$$

Subst:

$$\begin{array}{l} (3) - 2y = 1 \\ -3 \quad -3 \\ \hline -2y = -2 \\ y = 1 \end{array}$$

Answer: (3, 1)

8) Solve the system algebraically.

$$\begin{cases} (3x - y = 2) \cdot 2 \\ -6x + 2y = -4 \end{cases} \begin{array}{l} 6x - 2y = 4 \\ (+) -6x + 2y = -4 \\ \hline 0 \quad 0 \quad 0 \\ 0 = 0 \\ \text{True} \end{array}$$

Answer: ∞ solutions

9) Solve the system algebraically.

$$\begin{cases} -x - y = 3 \\ x + y = -4 \end{cases} \begin{array}{l} (+) \\ \hline 0 \quad 0 = -7 \\ \text{False} \end{array}$$

Answer: no solution

10) What is the augmented matrix described by the system of equations?

$$\begin{cases} x - 2y + 3z = -4 \\ 5y - 6z = -7 \\ -8x + 9y = 10 \end{cases}$$

Answer: $\left[\begin{array}{ccc|c} 1 & -2 & 3 & -4 \\ 0 & 5 & -6 & -7 \\ -8 & 9 & 0 & 10 \end{array} \right]$

11) What is the system of equations described by the augmented matrix?

$$\left[\begin{array}{cc|c} -2 & 5 & -11 \\ 0 & -4 & 6 \end{array} \right]$$

Answer: $\begin{cases} -2x + 5y = -11 \\ -4y = 6 \end{cases}$