

January 24

Solve Systems of Equations

Ex1 Solve: $3x + y = -23$
 $2x - y = -12$

$$\begin{array}{r} 3x + y = -23 \\ -3x \\ \hline y = -23 - 3x \end{array}$$

$$\begin{array}{r} 2x - y = -12 \\ -2x \\ \hline \cancel{2x} - y = -12 - 2x \\ \phantom{\cancel{2x}} - y = -12 - 2x \\ \phantom{\cancel{2x}} \\ \hline y = 12 + 2x \end{array}$$

2ND **TRACE** 5:intersect

"First curve?" Make sure it says Y1, press **ENTER**

"second curve?" Make sure it says Y2, press **ENTER**

"Guess?" Get cursor close to point of intersection, press **ENTER**

$$\boxed{(-7, -2)}$$

Ex2 Solve: $3x + y = -3$
 $6x + 2y = -12$

$$\begin{array}{r} 3x + y = -3 \\ -3x \\ \hline y = -3 - 3x \end{array}$$

$$\begin{array}{r} 6x + 2y = -12 \\ -6x \\ \hline \cancel{6x} + 2y = -12 - 6x \\ \phantom{\cancel{6x}} 2y = -12 - 6x \\ \phantom{\cancel{6x}} \\ \hline y = -6 - 3x \end{array}$$

no solution

*they don't intersect

Ex3 Solve: $y = (x-5)^2 + 2$

$$y = -2x + 12$$

$$(3, 6) \quad (5, 2)$$

Ex4 Solve: $y = -4|x+1| + 4$

$$x - 3y = 15$$

$$\begin{array}{r} x - 3y = 15 \\ -x \end{array}$$

$$\frac{-3y = 15 - x}{-3 \quad -3 \quad -3}$$

$$y = -5 + \frac{1}{3}x$$

$$(1.15, -4.62) \quad (-3.55, -6.18)$$

Ex5 Solve: $y - 8 = -(2x+3)^2$

$$4x^2 + 12x + y = -1$$

$$\begin{array}{r} y - 8 = -(2x+3)^2 \\ +8 \end{array}$$
$$y = -(2x+3)^2 + 8$$

$$\begin{array}{r} 4x^2 + 12x + y = -1 \\ -12x \end{array}$$
$$\begin{array}{r} 4x^2 + y = -1 - 12x \\ -4x^2 \end{array}$$
$$y = -1 - 12x - 4x^2$$

many solutions

*they are on top of each other