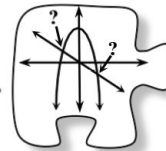


3.1.3 How many solutions are there?

.....
Multiple Solutions to Systems of Equations



#45 Solve each system of equations algebraically. For each one, explain what the solution (or lack thereof) tells you about the graph of the system.

a. $y = -3x + 5$
 $y = -3x - 1$

What does your solution tell you about the graph?

b. $y = \frac{1}{2}x^2 + 1$
 $y = 2x - 1$

What does your solution tell you about the graph?

c. $y^2 = x$
 $y = x - 2$

What does your solution tell you about the graph?

d. $4x - 2y = 10$
 $y = 2x - 5$

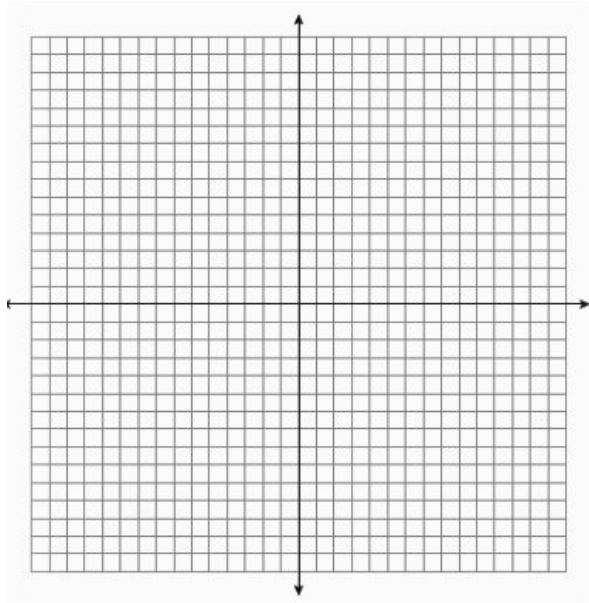
What does your solution tell you about the graph?

#46 Now consider the system shown below:

$$\begin{aligned}x^2 + y^2 &= 25 \\ y &= x^2 - 13\end{aligned}$$

a. How many solutions do you expect this system to have? Explain how you made your prediction.

b. Solve this system by graphing. **Scale by ones.**



How many solutions do you see? Was your prediction in part (a) correct?

c. Combine these equations to create a new equation so that the only variable is x .

combine the equations in a different way to create a new equation that contains only the variable y .

Which of these equations would be easier to solve? Why?

d. Solve one of your equations from part (c). If solving becomes too difficult, you may want to switch to the other combined equation.