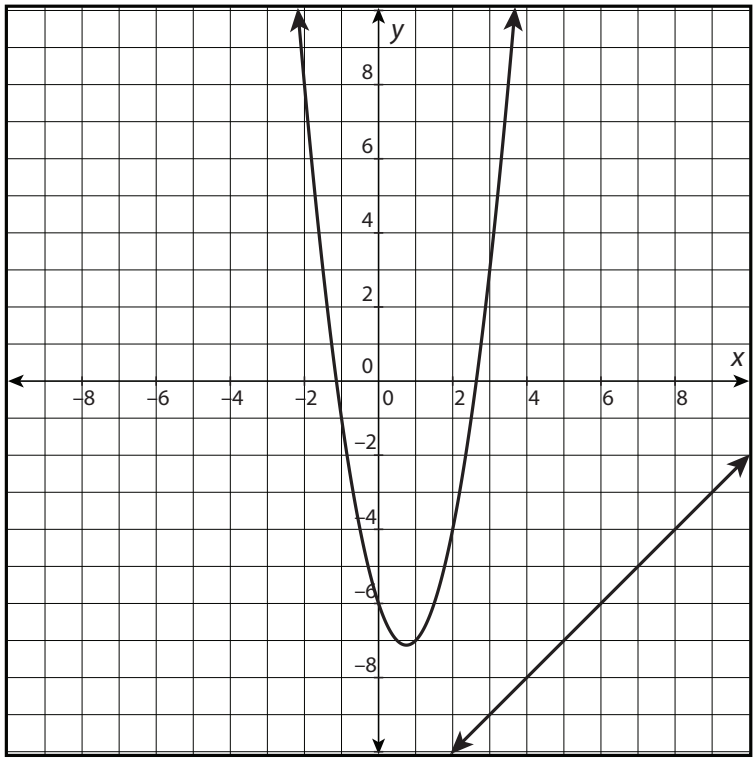
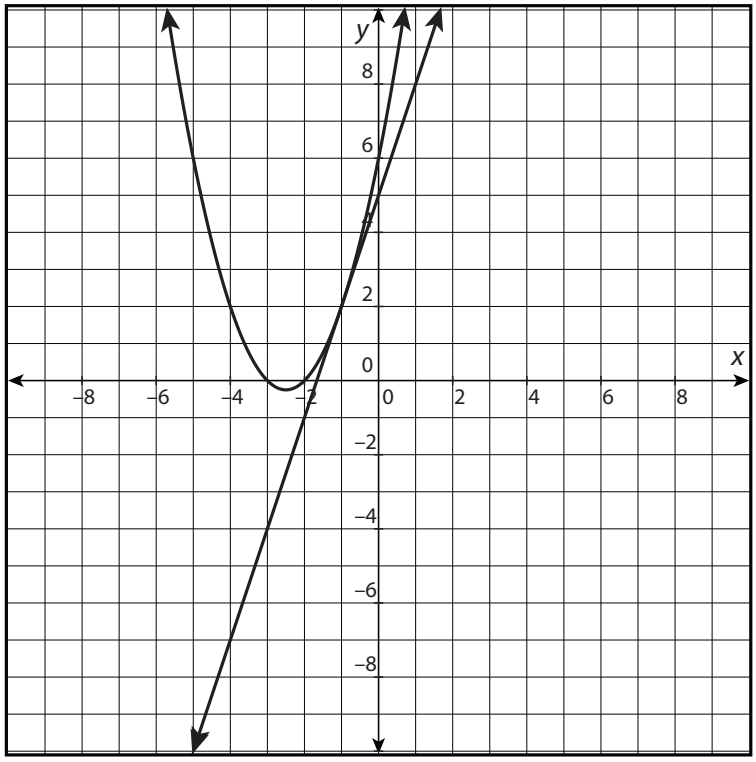
Practice 2.14: Solving Systems Graphically B

For problems 1 and 2, use the graphs to determine the solution(s) to the system of equations, if any exist.

1.



2.



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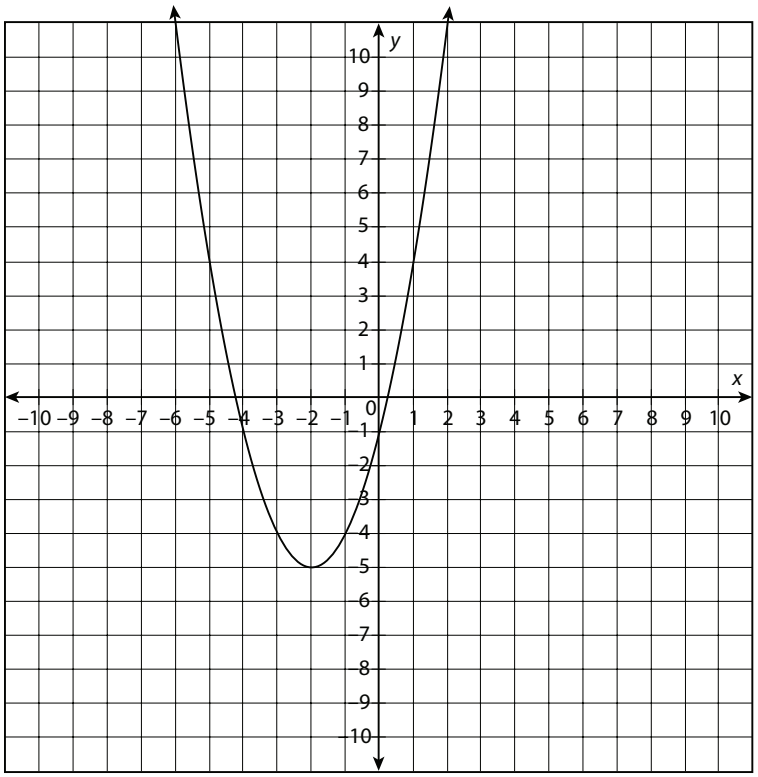
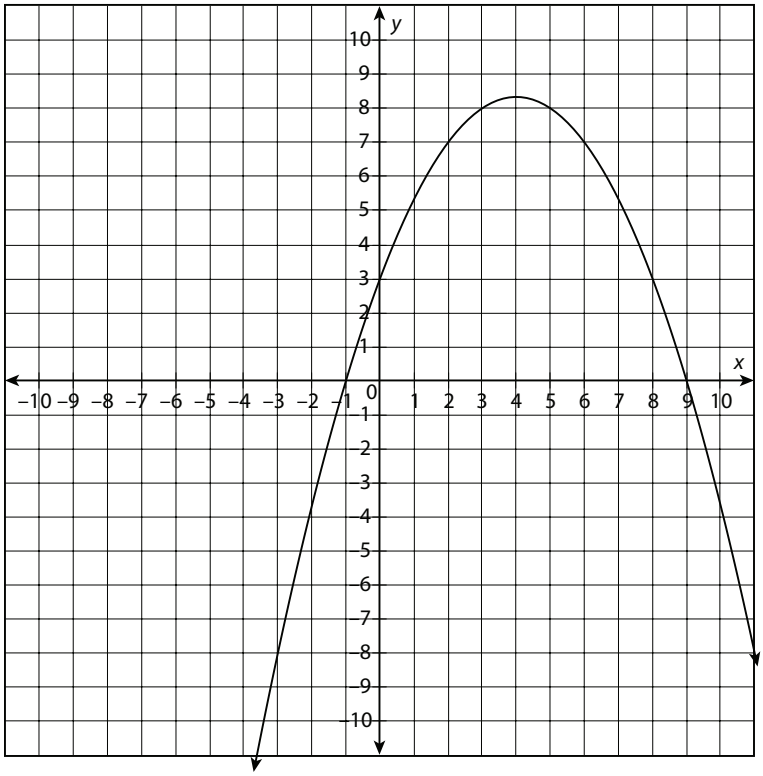
For problems 3 and 4, graph the given line. Then estimate the solutions to the system represented by the parabola and the line.

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



4. $x + 3y = 9$



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For problems 5–8, graph each system. Determine the real solution(s), if any exist.

5. $\begin{cases} y = -x^2 - 4 \\ y = -5x + 7 \end{cases}$

6. $\begin{cases} y = 3x^2 + 9x - 12 \\ y = -12 \end{cases}$

7. $\begin{cases} y = 7x^2 + 15x - 20 \\ y = -30 \end{cases}$

8. $\begin{cases} y = x^2 + 6x + 25 \\ y = 12.5x + 15 \end{cases}$

For problems 9 and 10, use the given information to create a graph. Then use the graph to answer the questions.

9. The price of a particular stock, $P(x)$, over a 1-year period can be modeled by $P(x) = 0.75x^2 - 6x + 20$, for which x is the number of months. The price of a different stock, $C(x)$, can be modeled by $C(x) = 2.75x + 2$ during the same year. Did these two stocks have the same value at any time during the year? If so, at what time(s) and at what value(s)?

10. A classic rock band, the Ailing Jones, released two versions of their latest album: a stand-alone CD, and a deluxe boxed set that includes the CD and a coffee table book. A record store manager compared sales of the stand-alone CD with sales of the deluxe boxed set. His figures showed that the total number of CDs sold followed the function $c(x) = 108x - 6x^2$, where $c(x)$ is the total number of CDs sold x days after the album was released. Sales of the deluxe boxed set followed the function $d(x) = 100x$. After how many days was the number of CDs sold equal to the number of deluxe boxed sets sold? How many of each version of the album were sold in that time?

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