Name _____ Date _____

Solve the system of equations using the substitution method.

1. $y = x^2 - 3x - 1$
$y = -2x + 5$

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

3. $y = 2x^2 - 1$
$y = -4x + 5$

Use a graphing calculator to find the points of intersection, if any, of the graph of the system of equations.

4. $y = x^2 + 3x + 2$
$y = 4x + 4$

5. $y = -x^2 - 9$
$y = -10$

6. $y = 3x^2 + x + 2$
$y = -5x + 2$

7. $y = -3x^2 + 6$
$y = -3x$

8. $y = x^2 + 2x - 8$
$y = -x - 8$

9. $y = -4x^2 + 2x$
$y = 6x$

10. $y = 2x^2 - 7$
$y = 2x + 5$

11. $y = -4x^2 + 2x + 1$
$y = 10x + 1$

12. $y = x^2 + 5x - 6$
$y = 5x + 3$

Solve the equation using a system.

13. $-8 = x^2 - 6x + 1$

14. $x^2 - 6x + 4 = -1$

15. $3x - 5 = -2x^2 + x - 5$

16. $2x^2 + 2x + 1 = 2x + 9$

17. $9x - 3 = -x^2 + 7x$

18. $x - 1 = 2x^2 - x - 1$

Use a graphing calculator to find the points of intersection, if any, of the graph of the system of equations.

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

20. $y = 0.5^x$
$y = -x$

21. $y = 3^x$
$y = 6x - 3$

22. Internet Miranda and Dakota each host their own blog. The number of individuals who follow Miranda's blog can be modeled by the equation $y = 2x + 3$, while the number of followers of Dakota's blog can be modeled by the equation $y = 3(1.4)^x$. In both equations, x represents the number of weeks since the girls started blogging and y represents, in hundreds, the number of individuals following their blog. Graph the two equations. Explain what the points where the graphs intersect represents in this situation. When will Dakota have more followers?

23. Cycling Toby is riding his bicycle in a large park, following a path that can be modeled by the equation $y = 2x^2 - x + 3$. Cecil is also riding his bicycle in the park, following a path modeled by the equation $y = 7x - 5$. Do their paths intersect? If so, what are the coordinates of the point(s) where their paths intersect?

24. Wind Carmen's hat was blown off her head by a sudden gust of wind. The wind is pushing the hat away from Carmen following a path that can be modeled by the equation $y = x^2 + 2$. Carmen races after the hat following a path modeled by the equation $y = x + 1$. Will Carmen catch up to her hat? Explain.