EXAMPLES 3 and 4 on p. 660 for Exs. 22–35

SOLVING QUADRATIC SYSTEMS **Solve the system.**

22. $6x^2 - y^2 - 15 = 0$
$x^2 + y^2 - 13 = 0$

23. $5x^2 + 25y^2 - 125 = 0$
$-x + y^2 - 5 = 0$

24. $10y = x^2$
$x^2 - 6 = -2$

25. $x^2 - y^2 - 4x + 2 = 0$
$-x^2 + y^2 - 4y + 2 = 0$

26. $x^2 - 2y = 6$
$x^2 - y^2 = -27$

27. $x^2 + 2y^2 - 10 = 0$
$4y^2 + x + 4 = 0$

28. $x^2 + y^2 - 16x + 39 = 0$
$x^2 - y^2 - 9 = 0$

29. $x^2 - y^2 - 8x + 8y = 24$
$x^2 + y^2 - 8x - 8y = -24$

30. $16x^2 - y^2 + 16y - 128 = 0$
$y^2 - 48x - 16y - 32 = 0$

31. $4x^2 - 56x + 9y^2 = -160$
$4x^2 + y^2 - 64 = 0$

32. $x^2 - y^2 - 32x + 128 = 0$
$y^2 - x^2 - 8y + 8 = 0$

33. $y^2 + x - 3 = 0$
$x^2 - 4x + 3y + 1 = 0$

34. **TAKS REASONING** How many solutions does the system consisting of the equations $x^2 + y^2 + 6x = 0$ and $y^2 + x - 6 = 0$ have?

Ⓐ 0 Ⓑ 1 Ⓒ 2 Ⓓ 4

35. **ERROR ANALYSIS** *Describe* and correct the error in using substitution to begin solving the system below. Then solve the system.

$x^2 + y^2 - 2x - 2y = -1$ Equation 1
$y^2 + x = 1$ Equation 2

Solve Equation 2 for x: $x = 1 - y^2$

Substitute for x in Equation 1:

$(1 - y^2)^2 + y^2 - 2(1 - y^2) - 2y = -1$

$1 - 2y^2 + y^2 + y^2 - 2 + 2y^2 - 2y = -1$

$2y^2 - 2y = 0$

36. **REASONING** Solve the system consisting of the equations $\frac{x^2}{2} + \frac{y^2}{4} = 1$ and $4y^2 = 16 - 8x^2$. What do you notice?

37. **GRAPHING CALCULATOR** Consider the system consisting of the equations $3y^2 + x^2 + 4x + 18y = -28$ and $9y^2 - 4x^2 + 8x + 90y = -185$. Solve each equation for y. Then use a graphing calculator to solve the system.

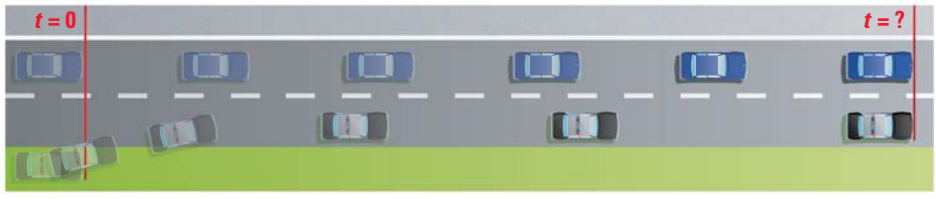
38. **CHALLENGE** Solve the system of three equations shown.

$x^2 + y^2 = 1$ Equation 1
$x^2 + y^2 + 4x + 4y - 5 = 0$ Equation 2
$x + y - 1 = 0$ Equation 3

PROBLEM SOLVING

EXAMPLE 2 on p. 659 for Exs. 39–41

39. **TRAFFIC SAFETY** A car passes a parked police car and continues at a constant speed r. The police car begins accelerating at a constant rate when it is passed. The diagram indicates the distance d (in miles) the police car travels as a function of time t (in minutes) after being passed. Write and solve a system of equations to find how long it takes the police car to catch up to the other car.



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○ = WORKED-OUT SOLUTIONS on p. WS1

= TAKS PRACTICE AND REASONING