

7.3 Solving Systems by Substitution

Solve each system by substitution.

1) $y = -3x + 12$
 $-4x + 6y = 6$

2) $y = -2x - 14$
 $y = 6x + 18$

3) $x^2 + y^2 = 13$
 $y = x + 1$

4) $y = -2x^2 - 5$
 $y = -5$

5) $y = -x^2 + 4x + 6$
 $y = -2x + 11$

6) $y = x^2 - 6x + 9$
 $y = -x + 5$

$$7) \begin{aligned} y &= x^2 - 2x - 6 \\ y &= 4x + 10 \end{aligned}$$

$$8) \begin{aligned} y &= 5x - 8 \\ y &= x^2 + 3x - 9 \end{aligned}$$

$$9) \begin{aligned} y &= 4 \\ x^2 + y^2 &= 20 \end{aligned}$$

$$10) \begin{aligned} x^2 + y^2 &= 10 \\ 2x + y &= 1 \end{aligned}$$

For each problem define your variables, write a system of equations, and solve the system of equations by substitution.

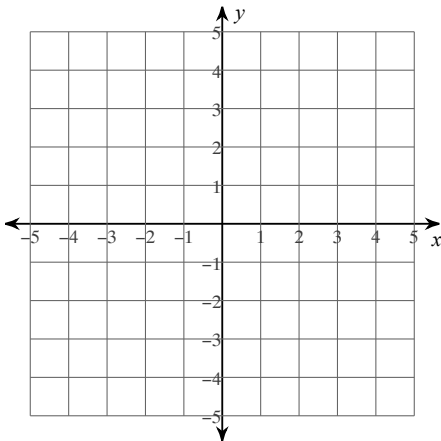
- 11) A collection of dimes and quarters is worth \$15.25. There are 103 coins in all. How many of each type of coins are there?
- 12) The school that Stefan goes to is selling tickets to a choral performance. On the first day of ticket sales the school sold 3 senior citizen tickets and 1 child ticket for a total of \$38. The school took in \$52 on the second day by selling 3 senior citizen tickets and 2 child tickets. Find the price of a senior citizen ticket and the price of a child ticket.

- 13) The height, h , of a baseball, in meters, at time t seconds after it is tossed out of a window is modeled by $h = -5t^2 + 20t + 15$. A boy shoots at the baseball with a paintball gun. The trajectory of the paintball is given by the equation $h = 3t + 3$. Will the paintball hit the baseball? If so, when? At what height will the baseball be?

- 14) The revenue for a production by a theatre group is $y = -50t^2 + 300t$, where t is the ticket price in dollars. The cost for the production is $y = 600 - 50t$. Determine the ticket price that will allow the production to break even.

Solve each system by graphing.

15) $y = -\frac{1}{4}x + 3$
 $x = 4$



16) $y = \frac{5}{2}x + 1$
 $y = \frac{1}{2}x - 3$

