

**Solve Absolute Value Functions***Solve for x.*

1.  $|4x - 1| - 3 = 9$

2.  $3|x + 7| + 17 = 5$

3.  $2|3x - 2| - 10 = -4$

**Solve Systems of Equations***Solve each system of equations.*

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

5.  $4x - y = 20$   
 $-2x - 2y = 10$

6.  $y = 5x + 4$   
 $10x - 2y = -8$

7.  $y = 3|x + 5| - 3$   
 $y = -\frac{5}{7}x + 2$

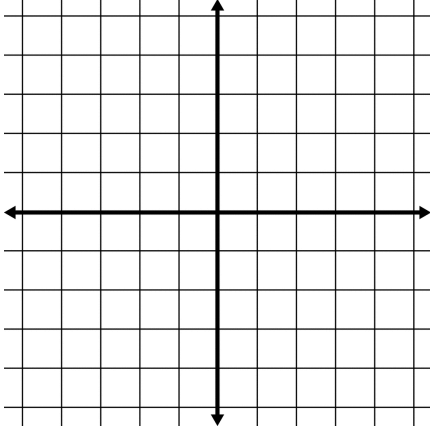
8.  $y = 2x^2 - 5x - 3$   
 $8x + 2y = -16$

9.  $y = |x|$   
 $y - 9 = -(x - 3)^2$

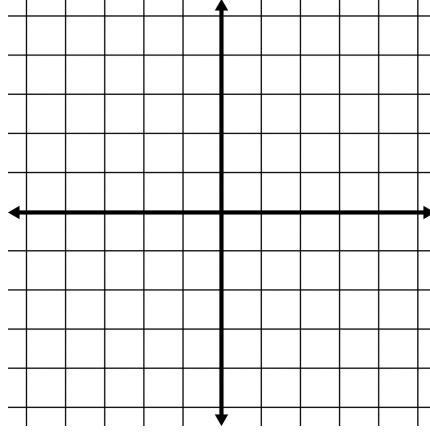
### **Solve Systems of Inequalities**

Solve each system of inequalities. Pay attention to whether the inequalities would have solid or dotted lines as well as where the shading belongs.

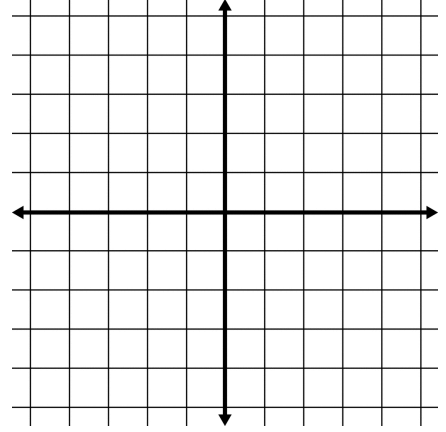
10.  $y \leq -\frac{1}{2}x + 3$   
 $y > |2x - 5|$



11.  $-3y < 2x + 9$   
 $2x + 3y \leq 6$



12.  $y < 3x^2 - 4x - 3$   
 $3x - 2y < 2$



### **Applications of Systems**

13. An exam worth 145 points contains 50 questions. Some of the questions are worth two points and the rest are worth five points. How many of each type of question is on the test?

14. Dennis mowed his next door neighbor's lawn for a handful of dimes and nickels, 80 coins in all. Upon completing the job he counted out the coins and it came to \$6.60. How many of each coin did he earn?

15. A woman owns 21 pets. Each of her pets is either a cat or a bird. If the pets have a total of 76 legs, how many cats and birds does the woman own?

### **Inverses of Functions**

Determine the inverse. State if the inverse is a function.

16.  $\{(-5, 6), (0, -1), (7, 4)\}$

17.  $f(x) = \frac{5x+6}{3}$

18.  $f(x) = (3x - 11)^2$

### **Function Operations**

Given  $f(x) = x + 2$ ,  $g(x) = 7x - 5$ , and  $h(x) = 2x^2 + 8$ , find the following:

19.  $(f + h)(x)$

20.  $(g \cdot f)(x)$

21.  $(g - f)(x)$

22.  $(h \cdot g)(x)$

### **Compositions of Functions**

Given  $f(x) = 3x + 4$ ,  $g(x) = 2x^2 - 1$ , and  $h(x) = x^3$ , find the following:

23.  $f(g(4))$

24.  $(f \circ h)(x)$

25.  $(h \circ g)(x)$

26.  $g(h(x))$