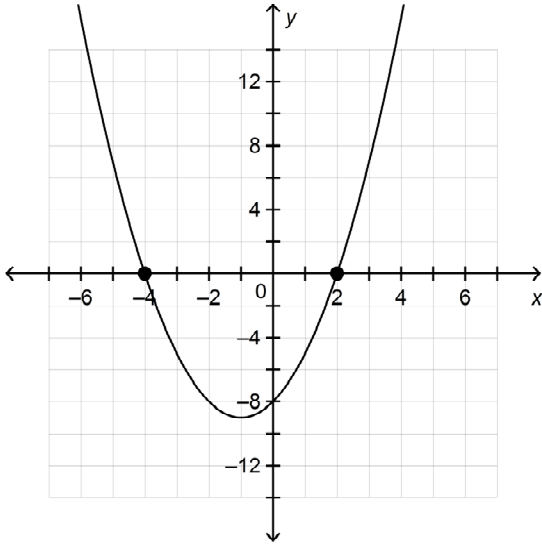


**PreCalc 11 Chapter 5 Review Pack v1**

**Multiple Choice**

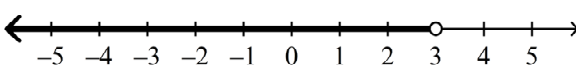
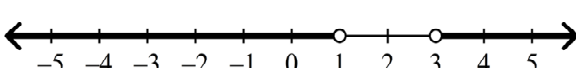
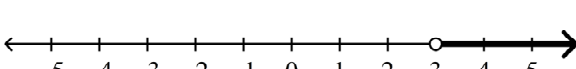
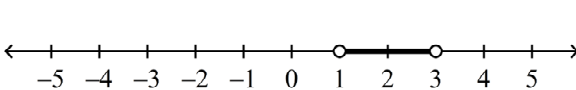
Identify the choice that best completes the statement or answers the question.

\_\_\_\_\_ 1. Use the graph to write the solution of this quadratic inequality:  $x^2 + 2x - 8 > 0$



- A.  $x < -4$  or  $x > 2, x \in \mathbb{R}$
- B.  $-2 < x < -4, x \in \mathbb{R}$
- C.  $-2 < x < 4, x \in \mathbb{R}$
- D.  $x < 2$  or  $x > 4, x \in \mathbb{R}$

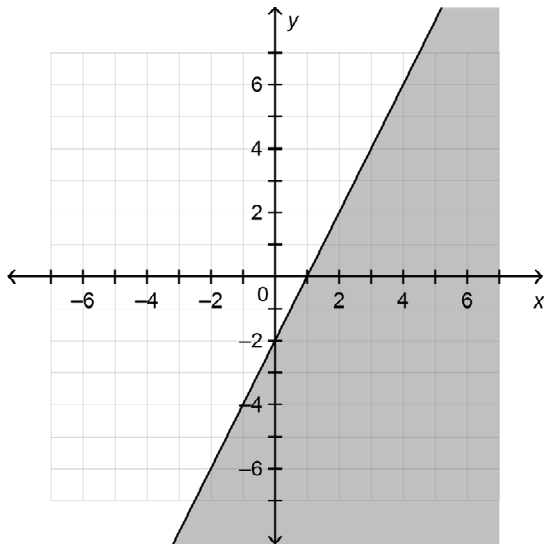
\_\_\_\_\_ 2. Represent the solution of this quadratic inequality on a number line:  $x^2 - 4x + 3 < 0$

- A. 
- B. 
- C. 
- D. 

\_\_\_\_\_ 3. Solve this quadratic inequality:  $4x^2 + 16x + 16 \leq 0$

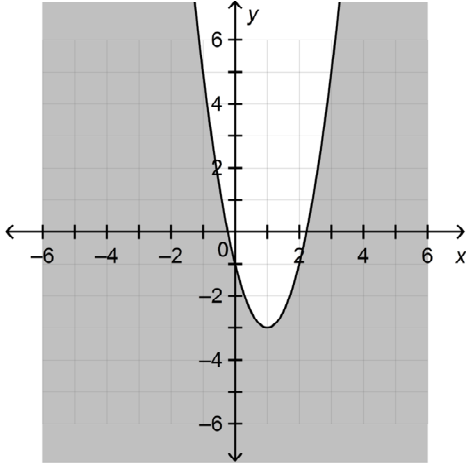
- A.  $x > -2, x \in \mathbb{R}$
- B.  $x = -2$  only
- C.  $x \in \mathbb{R}, x \neq -2$
- D.  $x \leq 2, x \in \mathbb{R}$

- \_\_\_\_\_ 4. Solve the quadratic inequality:  $2x^2 - 19x + 9 > 0$
- A.  $\frac{1}{2} < x < 9, x \in \mathbb{R}$                       C.  $-9 < x < -\frac{1}{2}, x \in \mathbb{R}$   
B.  $x < \frac{1}{2}$  or  $x > 9, x \in \mathbb{R}$                       D.  $x < -9$  or  $x > -\frac{1}{2}, x \in \mathbb{R}$
- \_\_\_\_\_ 5. Which coordinates are a solution of the inequality  $6x - 2y < -4$ ?
- A.  $(-2, -4)$                       B.  $(1, 5)$                       C.  $(0, 3)$                       D.  $(3, 10)$
- \_\_\_\_\_ 6. Which coordinates are NOT a solution of the inequality  $-4x + y \geq 3$ ?
- A.  $(2, 12)$                       B.  $(-1, -1)$                       C.  $(1, 9)$                       D.  $(4, 15)$
- \_\_\_\_\_ 7. A doctor books patients for either 15-min or 30-min appointments. She sees patients a maximum of 30 h each week. Write an inequality that represents the doctor's weekly appointments. Let  $x$  represent the number of 15-min appointments and  $y$  represent the number of 30-min appointments.
- A.  $15x + 30y \leq 30$                       C.  $15x + 30y > 1800$   
B.  $15x + \frac{1}{2}y \leq 30$                       D.  $15x + 30y \leq 1800$
- \_\_\_\_\_ 8. Write an inequality to describe this graph.



- A.  $y \geq 2x + 2$                       B.  $y \leq 2x - 2$                       C.  $y < 2x + 2$                       D.  $y > 2x - 2$

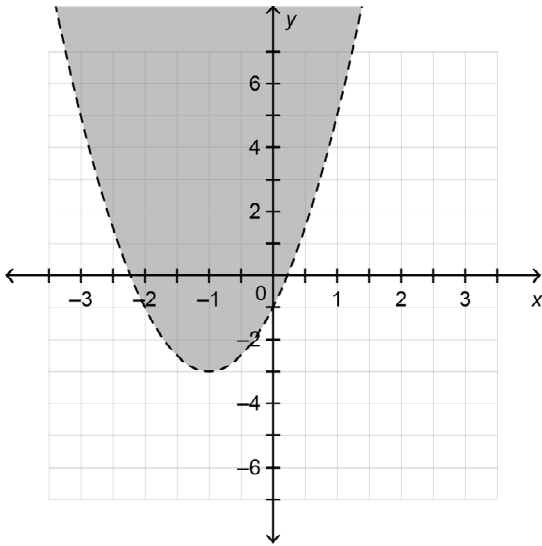
- \_\_\_\_\_ 9. Which ordered pair is a solution of the quadratic inequality  $y \leq x^2 + 1$ ?  
**A.**  $(-1, 5)$       **B.**  $(1, 1)$       **C.**  $(0, 3)$       **D.**  $(2, 6)$
- \_\_\_\_\_ 10. Which ordered pair is a solution of the quadratic inequality  $y > x^2 - 1$ ?  
**A.**  $(3, 7)$       **B.**  $(4, 19)$       **C.**  $(5, 18)$       **D.**  $(1, 0)$
- \_\_\_\_\_ 11. Which statement describes an error in the graph of  $y < 2x^2 - 4x - 1$ ?



- A.** The vertex is incorrect.  
**B.** The incorrect region is shaded.  
**C.** The parabola opens in the wrong direction.  
**D.** The parabola should be a broken line.
- \_\_\_\_\_ 12. Use a graphing calculator to graph this system of equations.  
 Write the coordinates of the point of intersection.  
 $y = 5x^2 + 8$   
 $10x - y = -3$   
**A.**  $(-1, -7)$       **B.**  $(-1, 3)$       **C.**  $(3, -1)$       **D.**  $(1, 13)$
- \_\_\_\_\_ 13. Use a graphing calculator to graph this system of equations.  
 Write the coordinates of the points of intersection.  
 $y = x^2 - 5x - 2$   
 $y = -x - 2$   
 Give the solutions to the nearest tenth.  
**A.**  $(4, -6)$  and  $(0, -2)$       **C.**  $(-6, 4)$  and  $(-2, 0)$   
**B.**  $(-2, 4)$  and  $(-6, 0)$       **D.**  $(4, -2)$  and  $(0, -6)$

- \_\_\_\_\_ 14. Two numbers are related:  
The sum of twice the first number and the square of the second number is 9.  
Twice the difference between the first number and the second number is 15.  
Which system models this relationship?
- A.  $(2x + y)^2 = 9$   
 $2x - y = 15$
- B.  $2x + y^2 = 9$   
 $2(x - y) = 15$
- C.  $2x^2 + y^2 = 9$   
 $x - 2y = 15$
- D.  $2x^2 + y = 9$   
 $2x - y = 15$

- \_\_\_\_\_ 15. Write an inequality to describe this graph.

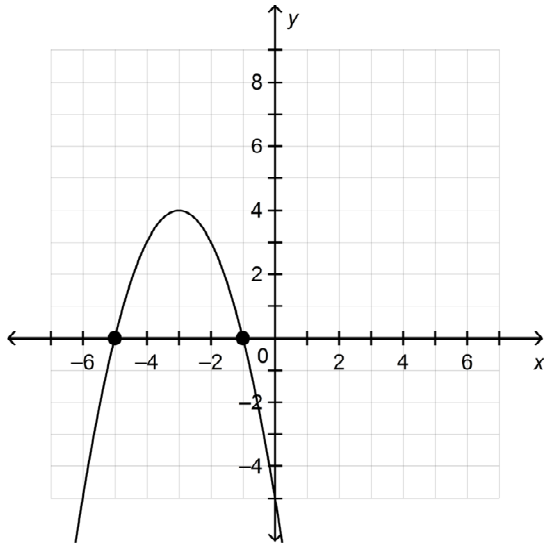


- A.  $y \geq 2(x - 1)^2 + 3$
- B.  $y > 2(x + 1)^2 - 3$
- C.  $y \leq 2(x - 1)^2 + 3$
- D.  $y < 2(x + 1)^2 - 3$
- \_\_\_\_\_ 16. Solve this quadratic-quadratic system algebraically.  
 $y = 2x^2 - 4x - 5$   
 $y = \frac{3}{4}(x - 1)^2 - 2$
- A. (3, 1) and (-1, 1)
- B. (-1, 1) and (3, 1)
- C. (1, 1) and (3, -1)
- D. (1, -1) and (1, 3)
- \_\_\_\_\_ 17. Solve this linear-quadratic system algebraically.  
 $y = x^2 - 4x + 1$   
 $-4x - y = -2$
- A. (1, -2) and (-1, 6)
- B. (1, 6) and (-1, -2)
- C. (6, 1) and (-2, -1)
- D. (-2, 1) and (6, -1)

## Short Answer

18. Solve this quadratic inequality:  $(x + 1)(x - 1) < 0$

19. Use the graph to write the solution of this quadratic inequality:  $-x^2 - 6x - 5 \leq 0$



20. Represent the solution of this quadratic inequality on a number line:  $4x^2 - 13x + 10 > 0$

21. Represent the solution of this quadratic inequality on a number line:  $4x^2 - 21x \leq 49$

22. Represent the solution of this quadratic inequality on a number line:  $-2x^2 - 7x > -15$

23. Solve this quadratic inequality:  $-2x^2 + 19x < 24$

24. The relationship between 2 positive numbers  $h$  and  $k$  is described by the inequality  $9h - 2k \geq 1$ .

a) What are the restrictions on the variables?

b) Write the coordinates of 2 points that satisfy the inequality.

25. a) Determine the critical values of this quadratic inequality:  $(2x + 5)(x - 6) > 0$   
 b) Complete the table.

Interval	Value of $x$	$(2x + 5)(x - 6)$	Sign of $(2x + 5)(x - 6)$
	$x = -3$		
	$x = 2$		
	$x = 8$		

- c) What is the solution of the inequality?
26. Solve this linear-quadratic system algebraically.  
 $y = -4x^2 + 4$   
 $8x - y = -8$
27. Solve this quadratic-quadratic system algebraically.  
 $y = 2x^2 + 6$   
 $y = -3x^2 + 1$
28. Solve this quadratic-quadratic system algebraically. Give the solutions to the nearest tenth, when necessary.  
 $y = x^2 + 3x + 2$   
 $y = -2x^2 + 4x + 3$

29. a) Determine the critical values of this quadratic inequality:  $(x - 6)(2x - 5) < 0$   
 b) Complete the table.

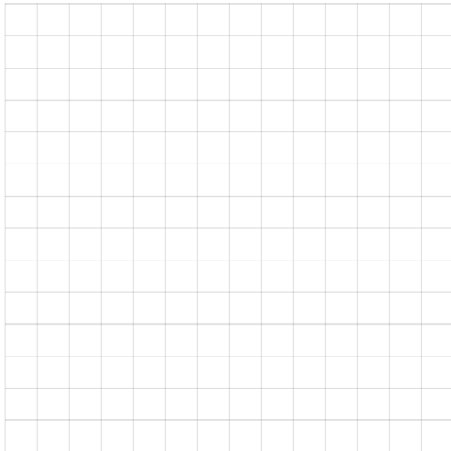
Interval	Value of $x$	$(x - 6)(2x - 5)$	Sign of $(x - 6)(2x - 5)$
	$x = 1$		
	$x = 4$		
	$x = 8$		

- c) What is the solution of the inequality?

Name: \_\_\_\_\_

ID: A

30. a) Graph the inequality:  $y < (x + 1)^2 - 4$   
b) Write the coordinates of 3 points that satisfy the inequality.



### Problem

31. Consider this inequality:  $16x^2 - 40x^2 + 25 > 0$   
a) Solve the inequality by factoring.  
b) Illustrate the solution on a number line.  
c) What do you notice about the solution of the inequality. Explain why.
32. For  $B(9, b)$  to be a solution of  $2x + 3y < 6$ , what must be true about  $b$ ?  
Show your work.
33. For  $A(a, 3)$  to be a solution of  $y < -3x^2 + 21$ , what must be true about  $a$ ?  
Show and explain your work.
34. Graph this quadratic inequality:  $\frac{(x + 1)^2}{2} - 5 \leq \frac{y}{5}$   
Show and explain your work.

35. Two numbers are related in this way:  
The sum of 5 times the first number and 6 times the second number is 0.  
When twice the second number is subtracted from the square of the first number, the result is equal to 20 minus the first number.
- Create a system of equations to represent this relationship.
  - Solve the system to determine the numbers. Explain the strategy you used.
36. Two numbers are related in this way:  
Twice the square of the first number minus the second number is  $-3$ .  
The square of the sum of the first number and 5 is equal to the second number minus 2.
- Create a system of equations to represent this relationship.
  - Solve the system to determine the numbers. Explain the strategy you used.
37. An electronics store makes a profit of \$24 on the sale of a cordless phone and a profit of \$30 on the sale of a cordless phone with answering machine. The manager's profit target is at least \$180 a day from the sales of these phones.
- Write an inequality that describes the profit.
  - Graph the inequality. What is the solution of the inequality?



- c) This table shows the numbers of phones sold on 3 consecutive days.

Day	Cordless Phone	Cordless Phone with Answering Machine
1	2	5
2	3	3
3	5	2

Use the graph to determine if the manager's profit target was met each day.  
Explain your strategy.