

Algebra I

Released Test Questions

1 Is the equation $3(2x - 4) = -18$ equivalent to $6x - 12 = -18$?

- A Yes, the equations are equivalent by the Associative Property of Multiplication.
- B Yes, the equations are equivalent by the Commutative Property of Multiplication.
- C Yes, the equations are equivalent by the Distributive Property of Multiplication over Addition.
- D No, the equations are not equivalent.

CSA10108

2 $\sqrt{16} + \sqrt[3]{8} =$

- A 4
- B 6
- C 9
- D 10

CSA00471

3 Which expression is equivalent to x^6x^2 ?

- A x^4x^3
- B x^5x^3
- C x^7x^3
- D x^9x^3

CSA20167

4 Which number does *not* have a reciprocal?

- A -1
- B 0
- C $\frac{1}{1000}$
- D 3

CSA10152

5 What is the solution for this equation?

$$|2x - 3| = 5$$

- A $x = -4$ or $x = 4$
- B $x = -4$ or $x = 3$
- C $x = -1$ or $x = 4$
- D $x = -1$ or $x = 3$

CSA00264

6 What is the solution set of the inequality $5 - |x + 4| \leq -3$?

- A $-2 \leq x \leq 6$
- B $x \leq -2$ or $x \geq 6$
- C $-12 \leq x \leq 4$
- D $x \leq -12$ or $x \geq 4$

CSA10036

Released Test Questions

Algebra I

7 Which equation is equivalent to

$$5x - 2(7x + 1) = 14x?$$

- A $-9x - 2 = 14x$
- B $-9x + 1 = 14x$
- C $-9x + 2 = 14x$
- D $12x - 1 = 14x$

CSA00206

8 Which equation is equivalent to

$$4(2 - 5x) = 6 - 3(1 - 3x)?$$

- A $8x = 5$
- B $8x = 17$
- C $29x = 5$
- D $29x = 17$

CSA00059

9 The total cost (c) in dollars of renting a sailboat for n days is given by the equation

$$c = 120 + 60n.$$

If the total cost was \$360, for how many days was the sailboat rented?

- A 2
- B 4
- C 6
- D 8

CSA00485

10 Solve: $3(x + 5) = 2x + 35$

Step 1: $3x + 15 = 2x + 35$

Step 2: $5x + 15 = 35$

Step 3: $5x = 20$

Step 4: $x = 4$

Which is the first *incorrect* step in the solution shown above?

- A Step 1
- B Step 2
- C Step 3
- D Step 4

CSA00332

11 A 120-foot-long rope is cut into 3 pieces. The first piece of rope is twice as long as the second piece of rope. The third piece of rope is three times as long as the second piece of rope. What is the length of the longest piece of rope?

- A 20 feet
- B 40 feet
- C 60 feet
- D 80 feet

CSA10052

12 The cost to rent a construction crane is \$750 per day plus \$250 per hour of use. What is the maximum number of hours the crane can be used each day if the rental cost is not to exceed \$2500 per day?

- A 2.5
- B 3.7
- C 7.0
- D 13.0

CSA10057

Algebra I

Released Test Questions

- 13** Which number serves as a counterexample to the statement below?

All positive integers are divisible by 2 or 3.

- A 100
B 57
C 30
D 25

CSG10197

- 14** What is the conclusion of the statement in the box below?

If $x^2 = 4$, then $x = -2$ or $x = 2$.

- A $x^2 = 4$
B $x = -2$
C $x = 2$
D $x = -2$ or $x = 2$

CSA30045

- 15** The chart below shows an expression evaluated for four different values of x .

x	$x^2 + x + 5$
1	7
2	11
6	47
7	61

Josiah concluded that for all positive values of x , $x^2 + x + 5$ produces a prime number. Which value of x serves as a counterexample to prove Josiah's conclusion false?

- A 5
B 11
C 16
D 21

CSA20027

- 16** John's solution to an equation is shown below.

Given: $x^2 + 5x + 6 = 0$

Step 1: $(x + 2)(x + 3) = 0$

Step 2: $x + 2 = 0$ or $x + 3 = 0$

Step 3: $x = -2$ or $x = -3$

Which property of real numbers did John use for Step 2?

- A multiplication property of equality
B zero product property of multiplication
C commutative property of multiplication
D distributive property of multiplication over addition

CSA20034

Released Test Questions

Algebra I

- 17** Stan's solution to an equation is shown below.

Given: $n + 8(n + 20) = 110$

Step 1: $n + 8n + 20 = 110$

Step 2: $9n + 20 = 110$

Step 3: $9n = 110 - 20$

Step 4: $9n = 90$

Step 5: $\frac{9n}{9} = \frac{90}{9}$

Step 6: $n = 10$

Which statement about Stan's solution is true?

- A Stan's solution is correct.
- B Stan made a mistake in Step 1.
- C Stan made a mistake in Step 3.
- D Stan made a mistake in Step 5.

CSA20035

- 18** When is this statement true?

The opposite of a number is less than the original number.

- A This statement is never true.
- B This statement is always true.
- C This statement is true for positive numbers.
- D This statement is true for negative numbers.

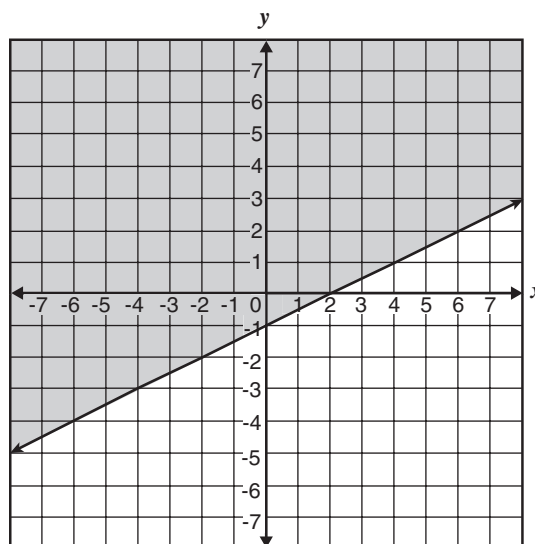
CSA20147

- 19** What is the y-intercept of the graph of $4x + 2y = 12$?

- A -4
- B -2
- C 6
- D 12

CSA00239

- 20** Which inequality is shown on the graph below?



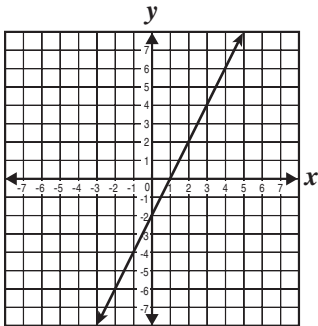
- A $y < \frac{1}{2}x - 1$
- B $y \leq \frac{1}{2}x - 1$
- C $y > \frac{1}{2}x - 1$
- D $y \geq \frac{1}{2}x - 1$

CSA10130

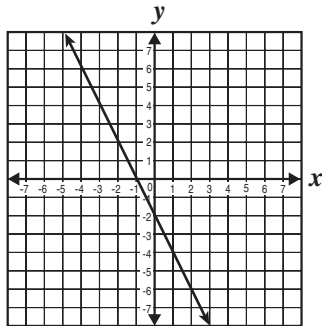
Algebra I

Released Test Questions

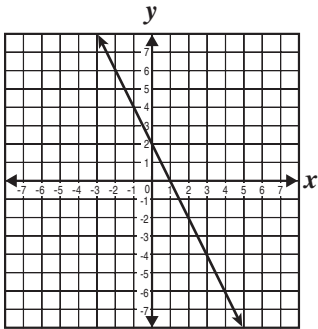
21 Which *best* represents the graph of $y = 2x - 2$?



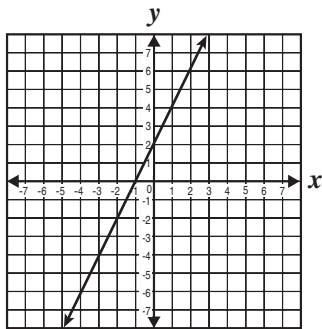
A



C



B



D

CSA00299

22 Which point lies on the line defined by $3x + 6y = 2$?

- A (0, 2)
- B (0, 6)
- C $(1, -\frac{1}{6})$
- D $(1, -\frac{1}{3})$

CSA00009

23 What is the equation of the line that has a slope of 4 and passes through the point $(3, -10)$?

- A $y = 4x - 22$
- B $y = 4x + 22$
- C $y = 4x - 43$
- D $y = 4x + 43$

CSA10150

24 The data in the table show the cost of renting a bicycle by the hour, including a deposit.

Renting a Bicycle

Hours (h)	Cost in dollars (c)
2	15
5	30
8	45

If hours, h , were graphed on the horizontal axis and cost, c , were graphed on the vertical axis, what would be the equation of a line that fits the data?

- A $c = 5h$
- B $c = \frac{1}{5}h + 5$
- C $c = 5h + 5$
- D $c = 5h - 5$

CSA10005

Released Test Questions

Algebra I

- 25** The equation of line l is $6x + 5y = 3$, and the equation of line q is $5x - 6y = 0$. Which statement about the two lines is true?

- A Lines l and q have the same y -intercept.
 B Lines l and q are parallel.
 C Lines l and q have the same x -intercept.
 D Lines l and q are perpendicular.

CSA00241

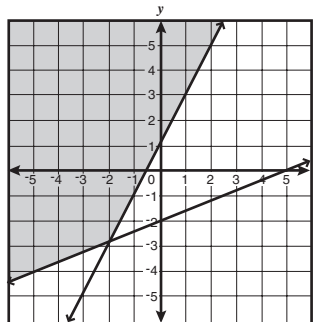
- 26** Which equation represents a line that is parallel to $y = -\frac{5}{4}x + 2$?

- A $y = -\frac{5}{4}x + 1$
 B $y = -\frac{4}{5}x + 2$
 C $y = \frac{4}{5}x + 3$
 D $y = \frac{5}{4}x + 4$

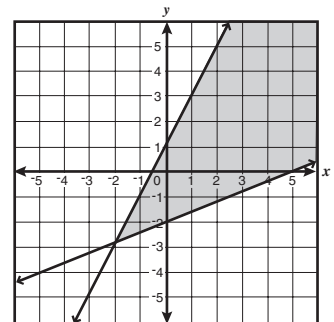
CSA10112

- 27** Which graph *best* represents the solution to this system of inequalities?

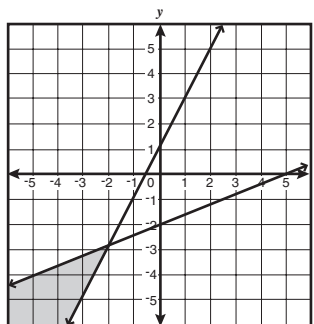
$$\begin{cases} 2x \geq y - 1 \\ 2x - 5y \leq 10 \end{cases}$$



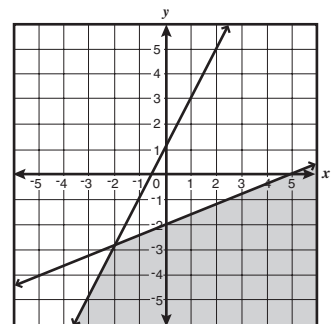
A



C



B



D

CSA00516

- 28** What is the solution to this system of equations?

$$\begin{cases} y = -3x - 2 \\ 6x + 2y = -4 \end{cases}$$

- A (6, 2)
 B (1, -5)
 C no solution
 D infinitely many solutions

CSA00027

Algebra I

Released Test Questions

- 29** Which ordered pair is the solution to the system of equations below?

$$\begin{cases} x + 3y = 7 \\ x + 2y = 10 \end{cases}$$

- A $\left(\frac{7}{2}, \frac{13}{4}\right)$
 B $\left(\frac{7}{2}, \frac{17}{5}\right)$
 C $(-2, 3)$
 D $(16, -3)$

CSA10131

- 30** Marcy has a total of 100 dimes and quarters. If the total value of the coins is \$14.05, how many quarters does she have?

- A 27
 B 40
 C 56
 D 73

CSA20083

31 $\frac{5x^3}{10x^7} =$

- A $2x^4$
 B $\frac{1}{2x^4}$
 C $\frac{1}{5x^4}$
 D $\frac{x^4}{5}$

CSA00303

32 $(4x^2 - 2x + 8) - (x^2 + 3x - 2) =$

- A $3x^2 + x + 6$
 B $3x^2 + x + 10$
 C $3x^2 - 5x + 6$
 D $3x^2 - 5x + 10$

CSA00086

- 33** The sum of two binomials is $5x^2 - 6x$. If one of the binomials is $3x^2 - 2x$, what is the other binomial?

- A $2x^2 - 4x$
 B $2x^2 - 8x$
 C $8x^2 + 4x$
 D $8x^2 - 8x$

CSA10160

- 34** Which of the following expressions is equal to $(x + 2) + (x - 2)(2x + 1)$?

- A $2x^2 - 2x$
 B $2x^2 - 4x$
 C $2x^2 + x$
 D $4x^2 + 2x$

CSA10191

Released Test Questions

Algebra I

35 Which is the factored form of $3a^2 - 24ab + 48b^2$?

- A $(3a - 8b)(a - 6b)$
- B $(3a - 16b)(a - 3b)$
- C $3(a - 4b)(a - 4b)$
- D $3(a - 8b)(a - 8b)$

CSA00066

36 Which is a factor of $x^2 - 11x + 24$?

- A $x + 3$
- B $x - 3$
- C $x + 4$
- D $x - 4$

CSA00503

37 Which of the following shows $9t^2 + 12t + 4$ factored completely?

- A $(3t + 2)^2$
- B $(3t + 4)(3t + 1)$
- C $(9t + 4)(t + 1)$
- D $9t^2 + 12t + 4$

CSA20106

38 If x^2 is added to x , the sum is 42. Which of the following could be the value of x ?

- A -7
- B -6
- C 14
- D 42

CSA10171

39 What quantity should be added to both sides of this equation to complete the square?

$$x^2 - 8x = 5$$

- A 4
- B -4
- C 16
- D -16

CSA00478

40 What are the solutions for the quadratic equation $x^2 + 6x = 16$?

- A $-2, -8$
- B $-2, 8$
- C $2, -8$
- D $2, 8$

CSA10062

41 Leanne correctly solved the equation $x^2 + 4x = 6$ by completing the square. Which equation is part of her solution?

- A $(x + 2)^2 = 8$
- B $(x + 2)^2 = 10$
- C $(x + 4)^2 = 10$
- D $(x + 4)^2 = 22$

CSA20139

Algebra I

Released Test Questions

- 42** Toni is solving this equation by completing the square.

$$ax^2 + bx + c = 0 \text{ (where } a \geq 0\text{)}$$

Step 1: $ax^2 + bx = -c$

Step 2: $x^2 + \frac{b}{a}x = -\frac{c}{a}$

Step 3: ?

Which should be Step 3 in the solution?

A $x^2 = -\frac{c}{b} - \frac{b}{a}x$

B $x + \frac{b}{a} = -\frac{c}{ax}$

C $x^2 + \frac{b}{a}x + \frac{b}{2a} = -\frac{c}{a} + \frac{b}{2a}$

D $x^2 + \frac{b}{a}x + \left(\frac{b}{2a}\right)^2 = -\frac{c}{a} + \left(\frac{b}{2a}\right)^2$

CSA00072

- 43** Four steps to derive the quadratic formula are shown below.

I $x^2 + \frac{bx}{a} = \frac{-c}{a}$

II $\left(x + \frac{b}{2a}\right)^2 = \frac{b^2 - 4ac}{4a^2}$

III $x = \pm \sqrt{\frac{b^2 - 4ac}{4a^2}} - \frac{b}{2a}$

IV $x^2 + \frac{bx}{a} + \left(\frac{b}{2a}\right)^2 = \frac{-c}{a} + \left(\frac{b}{2a}\right)^2$

What is the correct order for these steps?

A I, IV, II, III

B I, III, IV, II

C II, IV, I, III

D II, III, I, IV

CSA20062

- 44** Which is one of the solutions to the equation

$$2x^2 - x - 4 = 0?$$

A $\frac{1}{4} - \sqrt{33}$

B $-\frac{1}{4} + \sqrt{33}$

C $\frac{1 + \sqrt{33}}{4}$

D $\frac{-1 - \sqrt{33}}{4}$

CSA00314

Released Test Questions

Algebra I

- 45** Which statement *best* explains why there is no real solution to the quadratic equation $2x^2 + x + 7 = 0$?

- A The value of $1^2 - 4 \cdot 2 \cdot 7$ is positive.
 B The value of $1^2 - 4 \cdot 2 \cdot 7$ is equal to 0.
 C The value of $1^2 - 4 \cdot 2 \cdot 7$ is negative.
 D The value of $1^2 - 4 \cdot 2 \cdot 7$ is not a perfect square.

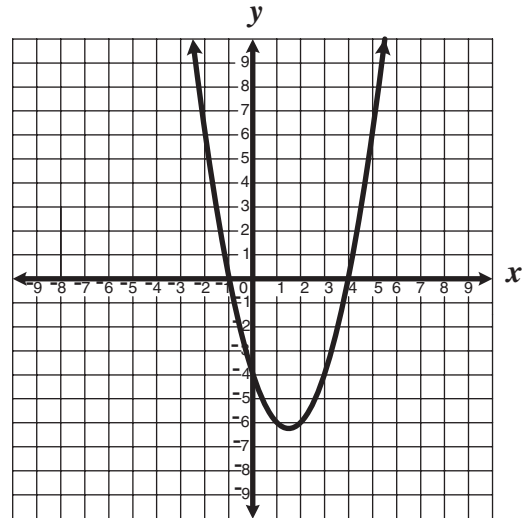
CSA10147

- 46** What is the solution set of the quadratic equation $8x^2 + 2x + 1 = 0$?

- A $\left\{-\frac{1}{2}, \frac{1}{4}\right\}$
 B $\{-1 + \sqrt{2}, -1 - \sqrt{2}\}$
 C $\left\{\frac{-1 + \sqrt{7}}{8}, \frac{-1 - \sqrt{7}}{8}\right\}$
 D no real solution

CSA10179

- 47** The graph of the equation $y = x^2 - 3x - 4$ is shown below.



For what value or values of x is $y = 0$?

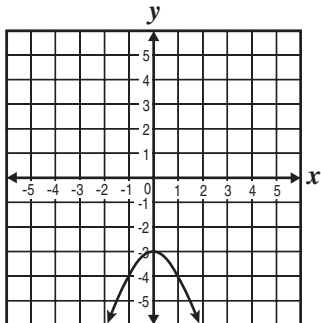
- A $x = -1$ only
 B $x = -4$ only
 C $x = -1$ and $x = 4$
 D $x = 1$ and $x = -4$

CSA00514

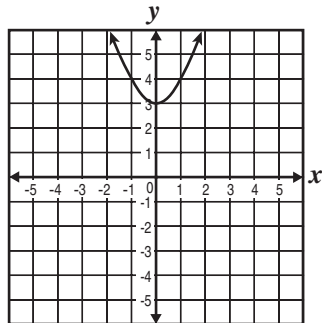
Algebra I

Released Test Questions

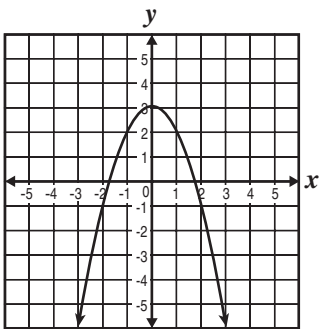
- 48** Which *best* represents the graph of $y = -x^2 + 3$?



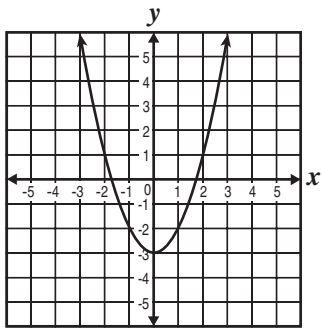
A



C



B



D

CSA00519

- 49** How many times does the graph of $y = 2x^2 - 2x + 3$ intersect the x -axis?

- A none
- B one
- C two
- D three

CSA10084

- 50** An object that is projected straight downward with initial velocity v feet per second travels a distance $s = vt + 16t^2$, where t = time in seconds. If Ramón is standing on a balcony 84 feet above the ground and throws a penny straight down with an initial velocity of 10 feet per second, in how many seconds will it reach the ground?

- A 2 seconds
- B 3 seconds
- C 6 seconds
- D 8 seconds

CSA00158

- 51** The height of a triangle is 4 inches greater than twice its base. The area of the triangle is 168 square inches. What is the base of the triangle?

- A 7 in.
- B 8 in.
- C 12 in.
- D 14 in.

CSA00104

- 52** What is $\frac{x^2 - 4xy + 4y^2}{3xy - 6y^2}$ reduced to lowest terms?

- A $\frac{x - 2y}{3}$
- B $\frac{x - 2y}{3y}$
- C $\frac{x + 2y}{3}$
- D $\frac{x + 2y}{3y}$

CSA00463

Released Test Questions

Algebra I

53 Simplify $\frac{6x^2 + 21x + 9}{4x^2 - 1}$ to lowest terms.

- A $\frac{3(x+1)}{2x-1}$
 B $\frac{3(x+3)}{2x-1}$
 C $\frac{3(2x+3)}{4(x-1)}$
 D $\frac{3(x+3)}{2x+1}$

CSA10025

54 What is $\frac{x^2 - 4x + 4}{x^2 - 3x + 2}$ reduced to lowest terms?

- A $\frac{x-2}{x-1}$
 B $\frac{x-2}{x+1}$
 C $\frac{x+2}{x-1}$
 D $\frac{x+2}{x+1}$

CSA10189

55 $\frac{7z^2 + 7z}{4z + 8} \cdot \frac{z^2 - 4}{z^3 + 2z^2 + z} =$

- A $\frac{7(z-2)}{4(z+1)}$
 B $\frac{7(z+2)}{4(z-1)}$
 C $\frac{7z(z+1)}{4(z+2)}$
 D $\frac{7z(z-1)}{4(z+2)}$

CSA00067

56 Which fraction equals the product

$$\left(\frac{x+5}{3x+2}\right)\left(\frac{2x-3}{x-5}\right)?$$

- A $\frac{2x-3}{3x+2}$
 B $\frac{3x+2}{4x-3}$
 C $\frac{x^2-25}{6x^2-5x-6}$
 D $\frac{2x^2+7x-15}{3x^2-13x-10}$

CSA10029

Algebra I

Released Test Questions

57
$$\frac{x^2 + 8x + 16}{x + 3} \div \frac{2x + 8}{x^2 - 9} =$$

A
$$\frac{2(x+4)^2}{(x-3)(x+3)^2}$$

B
$$\frac{2(x+3)(x-3)}{x+4}$$

C
$$\frac{(x+4)(x-3)}{2}$$

D
$$\frac{(x+4)(x-3)^2}{2(x+3)}$$

CSA20164

58 A pharmacist mixed some 10%-saline solution with some 15%-saline solution to obtain 100 mL of a 12%-saline solution. How much of the 10%-saline solution did the pharmacist use in the mixture?

A 60 mL

B 45 mL

C 40 mL

D 25 mL

CSA00333

59 Andy's average driving speed for a 4-hour trip was 45 miles per hour. During the first 3 hours he drove 40 miles per hour. What was his average speed for the last hour of his trip?

A 50 miles per hour

B 60 miles per hour

C 65 miles per hour

D 70 miles per hour

CSA00576

60 One pipe can fill a tank in 20 minutes, while another takes 30 minutes to fill the same tank. How long would it take the two pipes together to fill the tank?

A 50 min

B 25 min

C 15 min

D 12 min

CSA00161

61 Two airplanes left the same airport traveling in opposite directions. If one airplane averages 400 miles per hour and the other airplane averages 250 miles per hour, in how many hours will the distance between the two planes be 1625 miles?

A 2.5

B 4

C 5

D 10.8

CSA10055

62 Which relation is a function?

A $\{(-1, 3), (-2, 6), (0, 0), (-2, -2)\}$

B $\{(-2, -2), (0, 0), (1, 1), (2, 2)\}$

C $\{(4, 0), (4, 1), (4, 2), (4, 3)\}$

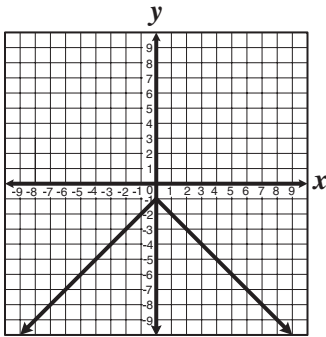
D $\{(7, 4), (8, 8), (10, 8), (10, 10)\}$

CSA10070

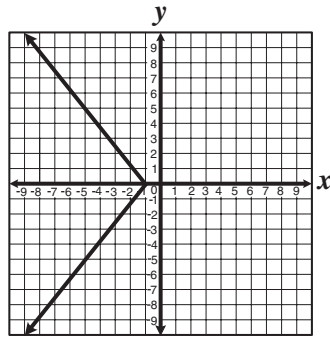
Released Test Questions

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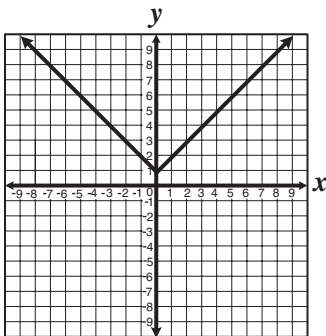
63 For which equation graphed below are *all* the *y*-values negative?



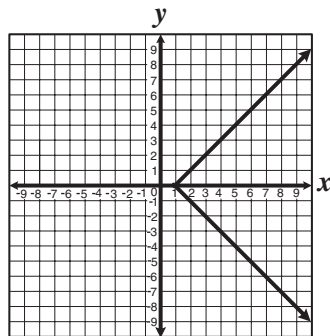
A



C



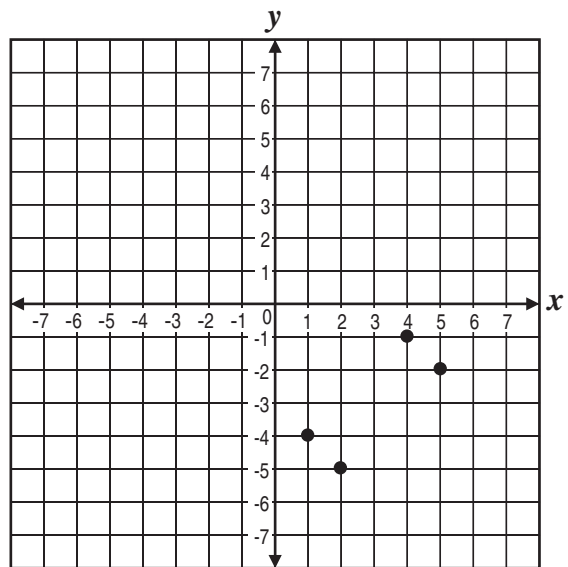
B



D

CSA00522

64 What is the domain of the function shown on the graph below?



- A $\{-1, -2, -3, -4\}$
- B $\{-1, -2, -4, -5\}$
- C $\{1, 2, 3, 4\}$
- D $\{1, 2, 4, 5\}$

CSA10072