



## Test #9

1

$$2x - y = 8$$

$$x + 2y = 4$$

For the system of equations above, what is the value of  $x + y$  ?

- A) -1
- B) 4
- C) 5
- D) 20

2

Which of the following is equivalent to

$$2(x^2 - x) + 3(x^2 - x) ?$$

- A)  $5x^2 - 5x$
- B)  $5x^2 + 5x$
- C)  $5x$
- D)  $5x^2$

3

Which of the following statements is true about the graph of the equation  $2y - 3x = -4$  in the  $xy$ -plane?

- A) It has a negative slope and a positive  $y$ -intercept.
- B) It has a negative slope and a negative  $y$ -intercept.
- C) It has a positive slope and a positive  $y$ -intercept.
- D) It has a positive slope and a negative  $y$ -intercept.

4

The front of a roller-coaster car is at the bottom of a hill and is 15 feet above the ground. If the front of the roller-coaster car rises at a constant rate of 8 feet per second, which of the following equations gives the height  $h$ , in feet, of the front of the roller-coaster car  $s$  seconds after it starts up the hill?

- A)  $h = 8s + 15$
- B)  $h = 15s + \frac{335}{8}$
- C)  $h = 8s + \frac{335}{15}$
- D)  $h = 15s + 8$



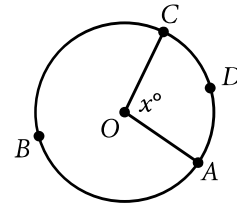
5

$$C = 75h + 125$$

The equation above gives the amount  $C$ , in dollars, an electrician charges for a job that takes  $h$  hours. Ms. Sanchez and Mr. Roland each hired this electrician. The electrician worked 2 hours longer on Ms. Sanchez's job than on Mr. Roland's job. How much more did the electrician charge Ms. Sanchez than Mr. Roland?

- A) \$75
- B) \$125
- C) \$150
- D) \$275

6



The circle above has center  $O$ , the length of arc  $\widehat{ADC}$  is  $5\pi$ , and  $x = 100$ . What is the length of arc  $\widehat{ABC}$ ?

- A)  $9\pi$
- B)  $13\pi$
- C)  $18\pi$
- D)  $\frac{13}{2}\pi$

7

If  $\frac{8}{x} = 160$ , what is the value of  $x$ ?

- A) 1,280
- B) 80
- C) 20
- D) 0.05



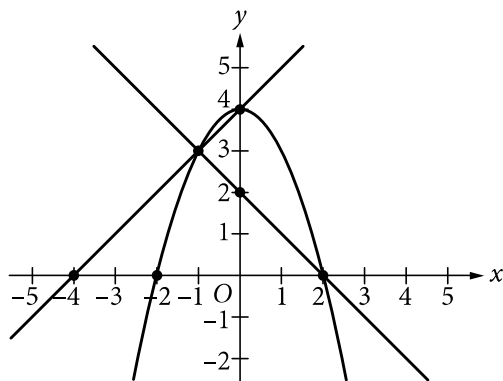
8

$$2ax - 15 = 3(x + 5) + 5(x - 1)$$

In the equation above,  $a$  is a constant. If no value of  $x$  satisfies the equation, what is the value of  $a$ ?

- A) 1
- B) 2
- C) 4
- D) 8

9



A system of three equations is graphed in the  $xy$ -plane above. How many solutions does the system have?

- A) None
- B) One
- C) Two
- D) Three

10

$$(ax + 3)(5x^2 - bx + 4) = 20x^3 - 9x^2 - 2x + 12$$

The equation above is true for all  $x$ , where  $a$  and  $b$  are constants. What is the value of  $ab$ ?

- A) 18
- B) 20
- C) 24
- D) 40

11

$$\frac{x}{x-3} = \frac{2x}{2}$$

Which of the following represents all the possible values of  $x$  that satisfy the equation above?

- A) 0 and 2
- B) 0 and 4
- C) -4 and 4
- D) 4



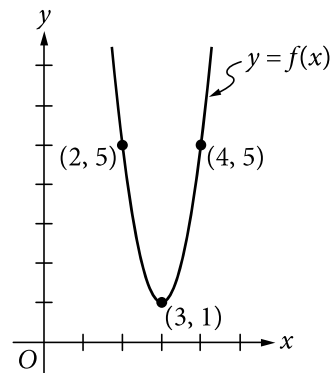
12

$$\frac{1}{2x+1} + 5$$

Which of the following is equivalent to the expression above for  $x > 0$ ?

- A)  $\frac{2x+5}{2x+1}$
- B)  $\frac{2x+6}{2x+1}$
- C)  $\frac{10x+5}{2x+1}$
- D)  $\frac{10x+6}{2x+1}$

13



The graph of the function  $f$  in the  $xy$ -plane above is a parabola. Which of the following defines  $f$ ?

- A)  $f(x) = 4(x-3)^2 + 1$
- B)  $f(x) = 4(x+3)^2 + 1$
- C)  $f(x) = (x-3)^2 + 1$
- D)  $f(x) = 3(x+3)^2 + 1$



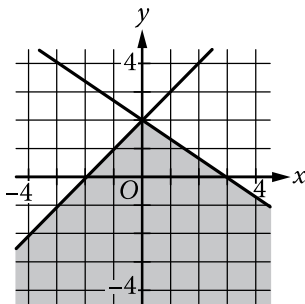
14

$$y \geq x + 2$$

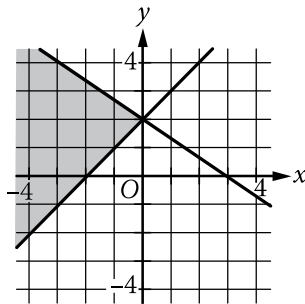
$$2x + 3y \leq 6$$

In which of the following does the shaded region represent the solution set in the  $xy$ -plane to the system of inequalities above?

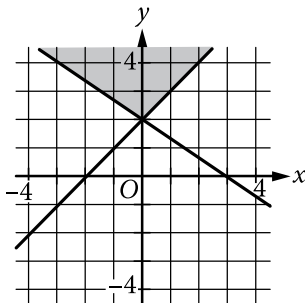
A)



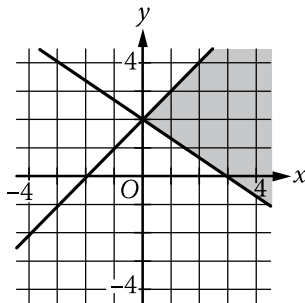
B)



C)



D)



15

What is the set of all solutions to the equation

$$\sqrt{x+2} = -x?$$

- A)  $\{-1, 2\}$
- B)  $\{-1\}$
- C)  $\{2\}$
- D) There are no solutions to the given equation.



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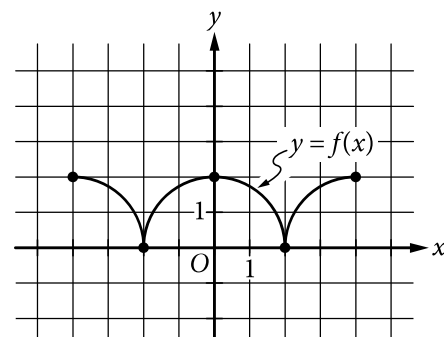
What is the volume, in cubic centimeters, of a right rectangular prism that has a length of 4 centimeters, a width of 9 centimeters, and a height of 10 centimeters?

17

$$4x + 2 = 4$$

If  $x$  satisfies the equation above, what is the value of  $2x + 1$ ?

18



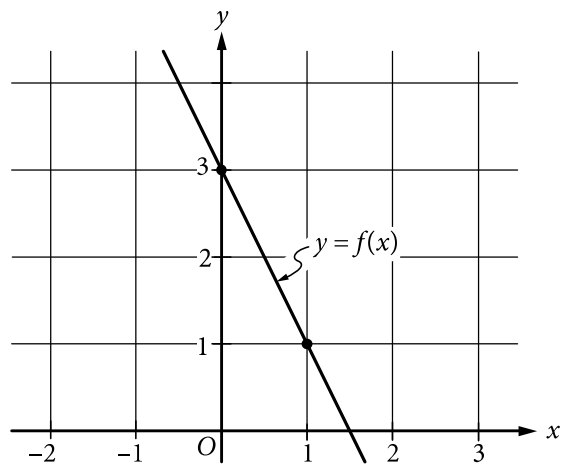
The figure above shows the complete graph of the function  $f$  in the  $xy$ -plane. The function  $g$  (not shown) is defined by  $g(x) = f(x) + 6$ . What is the maximum value of the function  $g$ ?



19

Triangle  $PQR$  has right angle  $Q$ . If  $\sin R = \frac{4}{5}$ , what is the value of  $\tan P$  ?

20



The graph of the linear function  $f$  is shown in the  $xy$ -plane above. The graph of the linear function  $g$  (not shown) is perpendicular to the graph of  $f$  and passes through the point  $(1, 3)$ . What is the value of  $g(0)$  ?

**STOP**

**If you finish before time is called, you may check your work on this section only.**

**Do not turn to any other section.**