No and Infinite Solutions

Multiple Choice (Calculator)

1. $3ax + 6(2x - 8) = -48$

In the equation above, a is a constant. For what value of a does the equation have infinitely many solutions?

A) -6
B) -4
C) 4
D) 6

2. $b(-2x - 1) + x = 9x - 2$

The equation above has no solutions, and b is a constant. What is the value of b ?

A) $-\frac{9}{2}$
B) -4
C) 0
D) 3

3. $\frac{2}{3}x + \frac{3}{4}y = a$

$8x + by = 12$

The system of equations above is true for infinitely many points in the xy-plane, and a and b are constants. What is the value of $\frac{a}{b}$?

A) $\frac{1}{9}$
B) $\frac{3}{4}$
C) 9
D) 12

4.

$$0.6x - 1.8y = 0.5$$

$$ax + by = 3$$

In the system of equations above, a and b are constants. If the system of equations has no solution, what is the value of $-\frac{a}{b}$?

A) $\frac{1}{3}$

B) 1

C) 2

D) 3

5.

$$x + y = 2$$

$$3x + 3y = 2$$

How many solutions does the given system of equations have?

A) Zero
B) Exactly one
C) Exactly two
D) Infinitely many

6.

$$21x + 10 = j(7x + 5) + 7x$$

In the given equation, j is a constant. The equation has exactly one solution. Which value could NOT be the value of j?

A) -1
B) 0
C) 1
D) 2

7. Which linear equation has exactly one solution?

A) $3x = 3x + 6$
B) $6x = 3x + 6$
C) $3(x + 2) = 3x + 6$
D) $3(x + 3) = 3x + 6$

8.

$$x - 2y = 6$$

$$4(x - 2y) = 24$$

How many solutions does the given system of equations have?

A) Zero
B) Exactly one
C) Exactly two
D) Infinitely many

9.

$$3x^2 - 6x - d = 0$$

In the equation above, d is a constant. If the equation has exactly one real solution, which of the following could be the value of d ?

A) -6
B) -3
C) 3
D) 6

10.

$$3(x + g) = fx + h$$

In the equation above, f, g, and h are constants. If the equation has infinitely many solutions, which of the following must be equal to h ?

A) f
B) g
C) $3f$
D) $3g$

Grid-In (Calculator)

11.

$$0.3x + 0.7y = 1.8$$
$$ax + 14y = 12$$

a is a constant. Find the value of a such that the system of equations above has no solution.

12.

$$0.3x + 0.7y = 0.9$$
$$ax + 14y = 18$$

a is a constant. Find the value of a such that the system of equations above has infinitely many solutions.

13.

$$\frac{2}{3}x - \frac{7}{9}y = \frac{5}{12}$$
$$ax - by = c$$

If the system of the equations above has infinitely many solutions, where $a, b,$ and c are constants, what is the value of $\frac{a}{b}$?

14.

$$a(x - b) = 5x - 8$$

In the equation above, a and b are constants. If the equation has infinitely many solutions for x, what is the value of b ?

15.

$$bx + 3 = 4x + 7$$

In the given equation, b is a constant. The equation has no solution. What is the value of b ?

16. In the xy-plane, where c is a constant, the system of equations $2x - 3y = 12$ and $\frac{1}{2}x - \frac{3}{4}y = c$ has infinite solutions. What is the value of c ?

17.

$$\frac{2}{3}x + \frac{5}{9}y = 6$$

$$ax + by = 3$$

The system of equations above has no solutions. If a and b are constants, what is the value of $\frac{a}{b}$?

18. In the xy-plane, the equations $2x + 5y = 12$ and $6x + 15y = d$ represent the same line for some constant d. What is the value of d?

19.

$$\frac{3}{5}x = ax - 3$$

In the equation above, a is a constant. The equation has no solution. What is the value of a ?

20.

$$3j(x - 3) = x - 3$$

In the equation above, j is a constant. If the equation has infinitely many solutions, what is the value of j ?