1

In triangle EFG, the sum of the measures of angles E and F is 31°. What is the measure of angle G?

31°

59°

118°

149°

2

Which of the following lists represents a data set with the smallest standard deviation?

32, 33, 35, 37, 38

33, 33, 35, 37, 37

33, 34, 35, 36, 37

34, 35, 35, 35, 36

3

In triangle RST, RS=ST and the length of RT¯ is 48 units. If tanR=724, what is the area, in square units, of triangle RST?

84

168

288

336

4

y=(x-21)(x-42)

y=0

The graphs of the equations in the given system of equations intersect at the point (x,y) in the xy-plane. What is a possible value of x?

0

2

42

63

5

The cost to rent a kayak consists of a fixed fee for the first hour and an hourly fee for each additional hour. The table shows the rental cost for 4 hours and for 6 hours.

Rental hours Rental cost (dollars)

4 90

6 130

Which function f gives the rental cost, in dollars, for x hours rental, where x≥1?

f(x)=30x

f(x)=20x

f(x)=20x+10

f(x)=20x+90

6

g(x)=(36-2x)(10+2x)

The function g is defined by the given equation. For what value of x does g(x) reach its maximum?

6.5

11.5

13

23

7

Rectangle X has a length of 24 millimeters (mm) and a width of 17.5 mm. Right triangle Y has a base of 20 mm. The area of rectangle X is 3 times the area of right triangle Y. What is the height, in mm, of right triangle Y?

7

14

21

42

8

x y

0 n

3 n+14

6 n+28

There is a linear relationship between x and y. The table shows three values of x and their corresponding values of y in terms of a constant n. What is the slope of the line in the xy-plane that represents this relationship?

12

2

143

14

9

If a=3k+5r and b=9k-12r+6, which expression is equivalent to a-b?

-6k+17r-6

-6k+17r+6

-6k-7r+6

-6k-7r-6

10

An exponential function f is defined by f(x)=cx, where c is a constant greater than 1. If f(8)=49·f(6), what is the value of c?

11

The equation h=9(v-273.15)5+32 gives the corresponding temperature h, in degrees Fahrenheit, of any substance that has a temperature of v kelvins, where v>0. If a substance has a temperature of 557.33 degrees Fahrenheit, what is the corresponding temperature, in kelvins, of this substance?

12

81x2+1833x+p=0

In the given equation, p is a constant. The equation has exactly one real solution. What is the value of p?

33

233

332

33

13

f(x)=3,600(0.28)x12

The function f gives the value, in dollars, of a certain piece of equipment after x months of use. If the value of the equipment decreases each year by p% of its value the preceding year, what is the value of p?

2

10

28

72

14

An equilateral triangle has a height of 493 units. What is the length, in units, of one side of this triangle?

983

98

493

49

15

Which expression is NOT a factor of 7,290x4-1,440?

9x2+4

3x2-2

3x+2

90

16

2,590x=5,180x

How many solutions does the given equation have?

Zero

Exactly one

Exactly two

Infinitely many

17

In the xy-plane, line r passes through the points (2,16) and (7,17). Line s passes through the point (1,2) and is perpendicular to line r. An equation of line s is ax+7y=c, where a and c are constants. What is the value of c?

18

If x-2=3, what is the value of (x-2)?

3

7

9

18

19

For 100 neurons, the table summarizes the distribution of classification and cell body diameter.

Classification Cell body diameter (micrometers)

Less than 20 20 to 30 Greater than 30

Sensory neuron 13 9 3

Motor neuron 0 17 19

Interneuron 10 29 0

One of these neurons will be selected at random. What is the probability of selecting a neuron with a cell body diameter that is less than or equal to 30 micrometers, given that it is not classified as a motor neuron? (Express your answer as a decimal or fraction, not as a percent.)

20

The value of a toy increased by 193% from the end of 2016 to the end of 2017 and then decreased by 31% from the end of 2017 to the end of 2018. What was the net percentage increase in the value of the toy from the end of 2016 to the end of 2018?

102.17%

133.17%

162.00%

283.83%

21

5x+3y=6

The given equation is one equation in a system of two linear equations. If the system of equations has at least one solution, which of the following equations could be the other equation in the system?

I. 7.5x+4.5y=9

II. 7.5x-4.5y=9

I only

II only

I and II

Neither I nor II

22

• Points upper A, upper B, upper C, and upper E are on the circle.

• Right triangle upper A upper B upper C is inscribed in the circle.

o Angle upper A upper B upper C is a right angle.

• Line segment upper B upper E is a chord of the circle.

• Line segment upper B upper E intersects line segment A upper C at point upper D.

• Angle upper C upper D upper E is a right angle.

• A note indicates the figure is not drawn to scale.

In the figure shown, points A, B, C, and E lie on the circle, and AB<BC. Segment AC is perpendicular to segment BE at point D, and BD=398. The diameter of the circle is 201. If CDAD=r, what is the value of r?