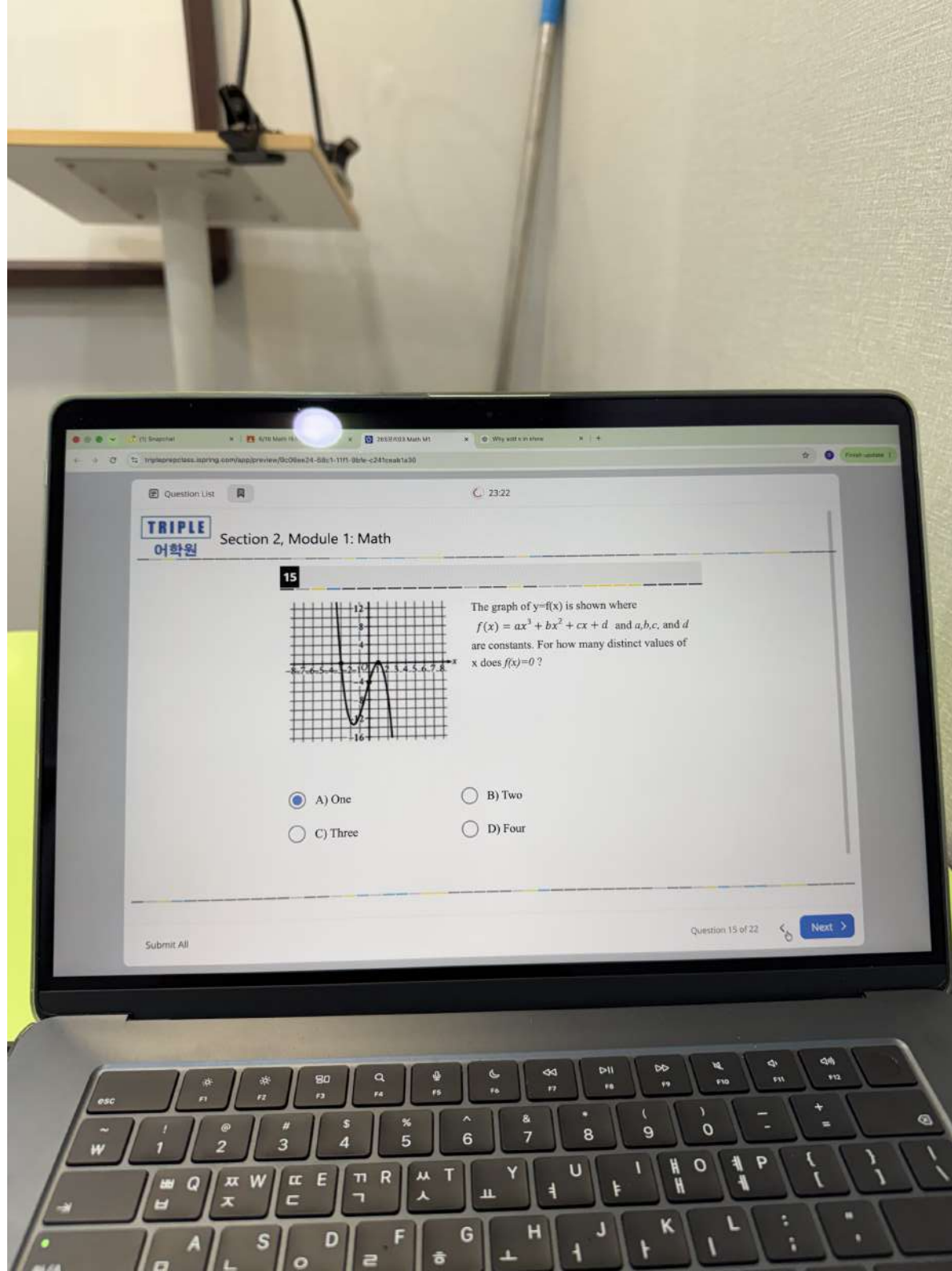




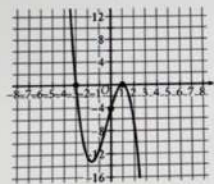
Question List

23:22

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Section 2, Module 1: Math

15



The graph of $y=f(x)$ is shown where
 $f(x) = ax^3 + bx^2 + cx + d$ and a, b, c , and d
are constants. For how many distinct values of
 x does $f(x)=0$?

- ☒ A) One
- ☐ B) Two
- ☐ C) Three
- ☐ D) Four

Submit All

Question 15 of 22

Next >

19:23

18

The product of a positive number x and the number that is 15 less than x is equal to 286. What is the value of x ?

26

Section 2, Module 1: Math

Computer-produced response directions

If you find **more than one correct answer**, enter only one answer.

You can enter up to 5 characters for a **positive** answer and up to 6 characters (including the negative sign) for a **negative** answer.

If your answer is a **fraction** that doesn't fit in the provided space, enter the decimal equivalent.

If your answer is a **decimal** that doesn't fit in the provided space, enter it by truncating or rounding at the fourth digit.

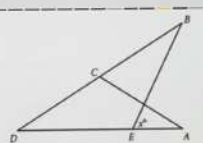
If your answer is a **mixed number** (such as $3\frac{1}{2}$), Enter it as an improper fraction ($7/2$) or its decimal equivalent (3.5).

Don't enter **symbols** such as a percent sign, comma, or dollar sign.

Examples

Answer	Acceptable ways to enter answer	Unacceptable: will NOT receive credit
3.5	3.5 3.50 7/2	3 1/2
$2\frac{2}{3}$	2/3 .6666 .6667 0.666 0.667	0.66 .66 0.67 .67
$-\frac{1}{3}$	-1/3 -3333 -0.333	-.33 -0.33

19



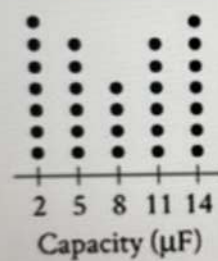
Note: Figure not drawn to scale.

In the figure, $AC=CD$. The measure of angle EBC is 29° , and the measure of angle ACD is 108° . What is the value of x ?

Question 19 of 22 Next

Section 2, Module 1: Math

22



The dot plot shows the distribution of capacity for a set of capacitors, set A, which a researcher used for a certain experiment. For another experiment, the researcher used a different set of capacitors, set B. Set B has the same number of capacitors as set A but the capacity of each capacitor of set B is 17 microfarads (μF) greater than the capacity of each respective capacitor in set A. Which of the following is true about the capacities of the capacitors in set B?

- ☐ A) The mean capacity is 8 μF , and the range of capacities is 12 μF
- ☒ B) The mean capacity is 8 μF , and the range of capacities is 29 μF
- ☐ C) The mean capacity is 25 μF , and the range of capacities is 12 μF
- ☐ D) The mean capacity is 25 μF , and the range of capacities is 29 μF

Section 2, Module 1: Math

ed response directions

ore than one correct answer, enter only one answer.
 r up to 5 characters for a **positive** answer and up to 6
 including the negative sign) for a **negative** answer.
 er is a **fraction** that doesn't fit in the provided space, enter
 equivalent.
 ver is a **decimal** that doesn't fit in the provided space, enter it
 g or rounding at the fourth digit.
 ver is a **mixed number** (such as $3\frac{1}{2}$). Enter it as an improper
 2) or its decimal equivalent (3.5).
 symbols such as a percent sign, comma, or dollar sign.

Examples

Answer	Acceptable ways to enter answer	Unacceptable: will NOT receive credit
3.5	3.5 3.50 7/2	31/2 3 1/2
$\frac{2}{3}$	$\frac{2}{3}$.6666 .6667 0.666 0.667	0.66 .66 0.67 .67
$-\frac{1}{3}$	-1/3 -.3333 -0.333	-.33 -0.33

21

Line j is defined by $4x + 5y = 55$. Line k is parallel to line j in the xy-plane. An equation of line k is $24x + ry = 15$, where r is a constant. If line k passes through the point (0, b), what is the value of b?

Section 2, Module 1: Math

Reduced response directions

Enter **more than one correct answer**, enter only one answer.
 Enter up to 5 characters for a **positive** answer and up to 6 characters (including the negative sign) for a **negative** answer.
 If the answer is a **fraction** that doesn't fit in the provided space, enter its decimal equivalent.
 If the answer is a **decimal** that doesn't fit in the provided space, enter it rounded or rounding at the fourth digit.
 If the answer is a **mixed number** (such as $3\frac{1}{2}$), Enter it as an improper fraction ($\frac{7}{2}$) or its decimal equivalent (3.5).
 Do not enter **symbols** such as a percent sign, comma, or dollar sign.

Examples

Answer	Acceptable ways to enter answer	Unacceptable: will NOT receive credit
3.5	3.5 3.50 7/2	31/2 3 1/2
$\frac{2}{3}$	2/3 .6666 .6667 0.666 0.667	0.66 .66 0.67 .67
$-\frac{1}{3}$	-1/3 -.3333 -0.333	-.33 -0.33

20

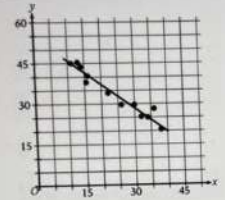
The positive number a is 2,800% of the number c , and c is 25% of the number b . If $a - b = wc$, where w is a constant, what is the value of w ?

Question List 30:28

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Section 2, Module 2: Math

2



The scatterplot shows the relationship between two variables, x and y , for data set A. A line of best fit for the data is also shown. Data set B is created by subtracting 11 units from the value of y for each data point from data set A. Which of the following is closest to the y -coordinate of the y -intercept of the line of best fit for data set B?

☐ A) 62.75 ☐ B) 59.62

☐ C) 53 ☐ D) 42.33

Submit All Question 2 of 22 < Next >



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어학원 Section 2, Module 2: Math

4

An object has a mass of 308 grams and a volume of 28 cubic centimeters. What is the density, in grams per cubic centimeter, of the object?

- ☐ A) 11
- ☐ B) 280
- ☐ C) 336
- ☐ D) 8,624

Submit All

Question 4 of 22 < Next >

Section 2, Module 2: Math

8

$$\begin{aligned}y &= 3x + 9 \\ 3y &= 8x - 6\end{aligned}$$

The solution to the given system of equations is (x, y) . What is the value of $x-y$?

- ☐ A) -123
- ☐ B) -33
- ☐ C) 3
- ☐ D) 57

Question List

18:12

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Section 2, Module 2: Math

Student-produced response directions

If you find **more than one correct answer**, enter only one answer.

You can enter up to 5 characters for a **positive** answer and up to 6 characters (including the negative sign) for a **negative** answer.

If your answer is a **fraction** that doesn't fit in the provided space, enter the decimal equivalent.

If your answer is a **decimal** that doesn't fit in the provided space, enter it by truncating or rounding at the fourth digit.

If your answer is a **mixed number** (such as $3\frac{1}{2}$), Enter it as an improper fraction ($7/2$) or its decimal equivalent (3.5).

Don't enter **symbols** such as a percent sign, comma, or dollar sign.

Examples

Answer	Acceptable ways to enter answer	Unacceptable: will NOT receive credit
3.5	3.5 3.50 7/2	3 1/2 3 1/2
2 51	2/3 .6666 .6667 0.666 0.667	0.66 .66 0.67 .67
1 3	-1/3 -.3333 -0.333	-.33 -0.33

11

$$\begin{aligned} -x - wy &= -337 \\ 2x - wy &= 47 \end{aligned}$$

In the given system of equations, w is a constant. In the xy -plane, the graphs of these equations intersect at the point $(g, 19)$, where g is a constant. What is the value of w ?

Question 11 of 22

Next

18:06

n 2, Module 2: Math

ponse directions

For **one correct answer**, enter only one answer.
Use up to 6 characters for a **positive** answer and up to 6
characters (including the negative sign) for a **negative** answer.

action that doesn't fit in the provided space, enter it.

imal that doesn't fit in the provided space, enter it
ling at the fourth digit.

ixed number (such as $3\frac{1}{2}$), Enter it as an improper
cimal equivalent (3.5).

such as a percent sign, comma, or dollar sign.

Examples

Acceptable ways to enter answer	Unacceptable: will NOT receive credit
3.5	31/2
3.50	3 1/2
7/2	
2/3	0.66
.6666	.66
.6667	.67
.666	.67
.667	
-1/3	-.33
-.3333	-.33
-.333	

13

A beaker containing a liquid is placed on a table. The function $g(t) = 295 + (361 - 295)(2.72)^{-0.104t}$ gives the approximate temperature, in kelvins, of the liquid t minutes after the beaker was placed on the table. According to this function, what was the approximate temperature, in kelvins, of the liquid when the beaker was placed on the table?

Page 10 of 10

14

For the exponential function f , the value of $f(1)$ is k , where k is a constant. Which of the following equivalent forms of the function f shows the value of k as the coefficient or the base?

- ☐ A) $f(x) = 49(1.7)^{x+1}$
- ☐ B) $f(x) = 85(1.7)^x$
- ☐ C) $f(x) = 144.5(1.7)^{x-1}$
- ☐ D) $f(x) = 245.65(1.7)^{x-2}$

Submit All

Question 14 of 22

Next

Question List

16:02

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Section 2, Module 2: Math

15

$$y = 9\left(\frac{a}{6}\right)^{x+c} - b$$

How many times does the graph of the given equation in the xy -plane cross the x -axis, where a , b , and c are positive constants such that $a > 6$ and $b > c$?

- ☐ A) Zero
- ☐ B) One
- ☒ C) Two
- ☐ D) Three

Submit All

Question 15 of 22

Next >

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Question List 7:45

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Section 2, Module 2: Math

18

$$\frac{1}{5xy} + xyz = \frac{1}{4yz}$$

In the given equation, x , y , and z are positive numbers. Which expression is equivalent to y ?

☐ A) $\frac{5x - 4z}{20x^2z^2}$

☐ B) $\sqrt{\frac{5x - 4z}{20x^2z^2}}$

☐ C) $\frac{1}{4xz^2 - 5x^2z}$

☐ D) $\sqrt{\frac{1}{4xz^2 - 5x^2z}}$

Submit All

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Question List

2:14

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Section 2, Module 2: Math

21

x	$g(x)$
-21	2
-9	0
15	4

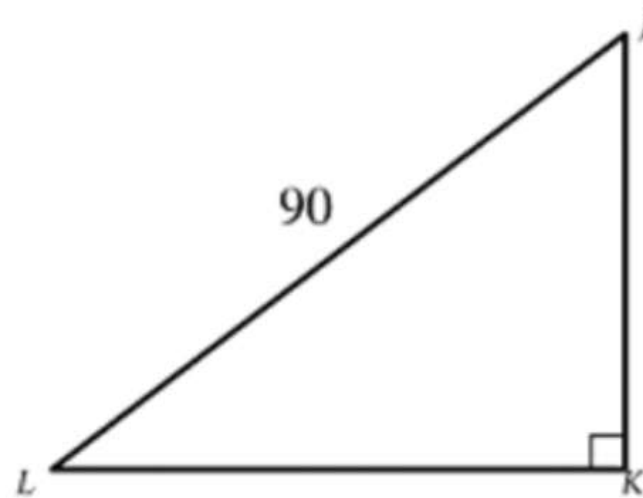
The table shows three values of x and their corresponding values of $g(x)$, where $g(x) = \frac{f(x)}{(x+3)}$ and f is a linear function. What is the y -intercept of the graph of $y = f(x)$ in the xy -plane?

- ☐ A) (0,-9)
- ☐ B) (0,3)
- ☒ C) (0,9)
- ☐ D) (0,7)

Submit All

Question 21 of 22

Next >



Note: Figure not drawn to scale.

In the right triangle JKL , the tangent $\angle L$ of is $\frac{3}{4}$. What is the length of $\overline{JK}$?

☐ A) $\frac{35}{16}$

☒ B) $\frac{15}{4}$

☐ C) 54

☐ D) 72

$$\sqrt[5]{x^m}$$

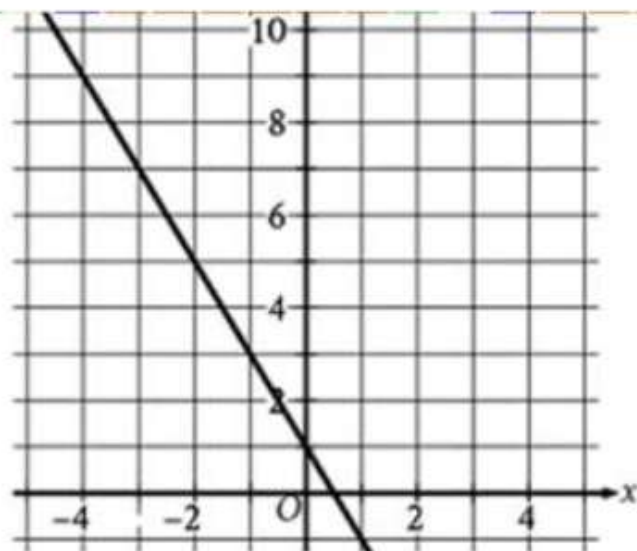
In the given expression, m is a constant and $x > 1$. The expression can be rewritten as $\sqrt[7]{x}$. What is the value of m ?

15

$$z(w) = (0.829)^{2w}$$

The function z is defined by the equation shown. The value of $z(w)$ decreases by p % for each increase by 1 in the value of w . Which of the following is closest to the value of p ?

- ☐ A) 0.171
- ☐ B) 0.829
- ☐ C) 17.1
- ☐ D) 31.3



The graph of the linear function $y = f(x) + 11$ is shown. If c and d are positive constants, which equation could define f ?

- ☐ A) $f(x) = -d - cx$
- ☐ B) $f(x) = d + cx$
- ☐ C) $f(x) = d - cx$
- ☐ D) $f(x) = -d + cx$

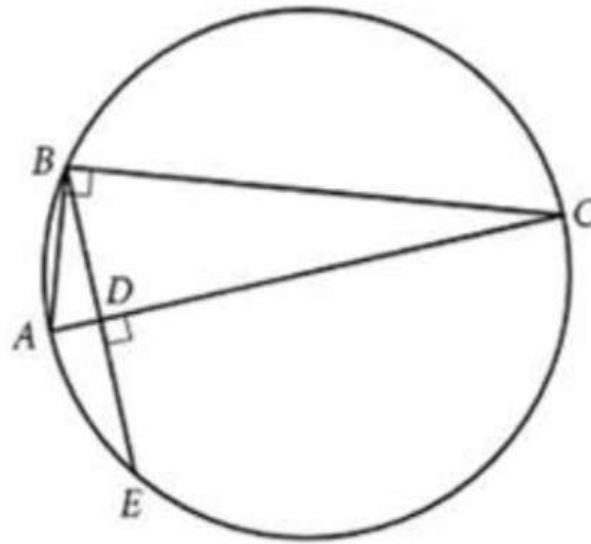
The speed of particles A, B, and C are a meters per second, b meters per second, and c meters per second, respectively. If the speed of particle A is 6,000% of the speed of particle C and the speed of particle C is 0.008% of the speed of particle B, which expression represents the value of $a + b$ in terms of c ?

- ☐ A) $12,560c$
- ☐ B) $6,125c$
- ☐ C) $6,008c$
- ☐ D) $1,850c$

$$-16(5x - 3)^2 + 4(5x - 2)^2$$

The given expression can be rewritten as $\frac{a}{4}x^2 + \frac{b}{4}x + \frac{c}{4}$, where a , b , and c are constants. What is the value of $a + b + c$?

- ☐ A) -112
- ☐ B) -56
- ☐ C) -28
- ☐ D) -7



Note: Figure not drawn to scale.

In the figure shown, point A , B , C , and E lie on the circle, and $AB < BC$. Segment AC is perpendicular to segment BE at point D , and $BD = \sqrt{346}$. The diameter of the circle is 175.

If $\frac{CD}{AD} = r$, what is the value of r ?

A linear model estimates the population of city from 1995 to 2019. The model estimates the population was 55 thousand in 1995, 217 thousand in 2015, and x thousand in 2019. To the nearest whole number, what is the value of x ?

$$\frac{x}{7} + 5(y - 14) = 29$$

$$\frac{x}{3} - 5(y - 14) = 41$$

The solution to the given system of equation is (x, y) . What is the value of $10x$.

When several resistors are connected in series in a circuit, the total resistance of the circuit is the sum of the resistances of these resistors. A certain circuit contains 8 resistors connected in series, where the resistance of each resistor is positive. This circuit has a total resistance of 130 ohms. The total resistance of 3 resistors in this circuit is 90 ohms. Which inequality best represents all possible values of the resistance x , in ohms, of one of the other 5 resistors in this circuit?

- ☐ A) $0 < x < 8$
- ☐ B) $0 < x < 40$
- ☐ C) $40 < x < 90$
- ☐ D) $40 < x < 130$

2

The graph of the polynomial function f in the xy -plane, where $y = f(x)$, passes through the point $(5,3)$. What is the value of $f(5)$?

- ☐ A) 3
- ☐ B) 5
- ☐ C) 8
- ☐ D) 15

7

The density of a certain type of wood is 353 kilograms per cubic meter. A sample of this type of wood is in the shape of a cube and has a mass of 345 kilograms. To the nearest hundredth of a meter, what is the length of one edge of this sample?

- ☐ A) 0.98
- ☐ B) 0.99
- ☐ C) 1.01
- ☐ D) 1.02

On a plot of land, 52.0% of the square footage is farmland and the remaining square footage is pasture. There are buildings on exactly 21.5% of the square footage of the farmland, and there are building on exactly 14.0% of the square footage of the pasture. If there are buildings on exactly p % of the square footage of the plot of land, what is the value of p ?

21

$$(x + 3)^2 + (y - 19)^2 = 144$$

The graph of the given equation is a circle in the xy -plane. The point (a, b) lies on the circle. Which of the following is a possible value for a ?

- ☐ A) -16
- ☐ B) -13
- ☐ C) 12
- ☐ D) 19

$$f(x) = 8(7)^x$$

The function f is defined by the given equation. If $g(x)=f(x+2)$, which of the following equations defines the function g ?

- ☐ A) $g(x) = 16(7)^x$
- ☒ B) $g(x) = 392(7)^x$
- ☐ C) $g(x) = 16(14)^x$
- ☐ D) $g(x) = 64(49)^x$

$$\frac{4}{9}(4x + 9)(x + \sqrt{4k + 9})(x - \sqrt{4k + 9}) = 0$$

In the given equation, k is a positive constant. The product of the solutions to the equation is 63. What is the value of k ?

19/4

In the xy -plane, a unit circle with center at the origin O contains point A with coordinates $(1, 0)$ and point B with coordinates

$(\frac{7}{\sqrt{65}}, -\frac{4}{\sqrt{65}})$. If the measure of angle AOB is p radians,

what is the value of $\frac{\cos p}{\sin p}$?

The function is defined by $h(x) = -\sqrt{x^2 + bx + c}$ where b and c are constants. In the xy -plane, the graph of $y = h(x)$ contains the points $(2, 0)$ and $(0, -\sqrt{266})$. If $h(m) = 0$, what is the greatest possible value of m ?