

Oklahoma School Testing Program



Oklahoma Core Curriculum Tests

2010–2011 Released Items

End-of-Instruction
ACE Algebra II

Oklahoma State Department of Education
Oklahoma City, Oklahoma



Section 1

Section 1

Directions

Read each question and choose the best answer.

1 Which radical expression is equivalent to $(7x^9)^{\frac{3}{2}}$?

A $\sqrt[3]{7x^{18}}$

B $\sqrt[3]{49x^{18}}$

C $\sqrt{7x^{27}}$

D $\sqrt{343x^{27}}$

2

$$(\sqrt{12})(\sqrt[3]{4n^3})$$

What is the simplified form of this expression?

F $4n(\sqrt{3})$

G $2n(\sqrt[3]{12})$

H $2n(\sqrt{3})(\sqrt[3]{4})$

J $4n^3(\sqrt{3})(\sqrt[3]{4})$

3

$$(3x^3 - 5x + 6) \div (x + 2)$$

Which expression represents this quotient?

- A $3x^2 - 5x + 3$
- B $3x^2 + x + 8$
- C $3x^2 - 11x + \frac{28}{x + 2}$
- D $3x^2 - 6x + 7 - \frac{8}{x + 2}$

4

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

Which expression is equivalent to the expression above?

- F $\frac{2x + 2}{x + 5}$
- G $\frac{x^2 + 6x + 5}{5x}$
- H $\frac{x^2 + 2x + 1}{x + 5}$
- J $\frac{x^2 + 5x + 2}{5x}$

Section 1

5 A circuit has a current of $(10 + 12i)$ amps, and another circuit has a current of $(6 - 8i)$ amps. What is the difference between the currents of the two circuits?

- A $(4 - 4i)$ amps
- B $(4 + 20i)$ amps
- C $(16 - 4i)$ amps
- D $(16 + 20i)$ amps

6 Which expression is equivalent to $(\sqrt{-4})(\sqrt{-12})$?

- F $-4\sqrt{3}$
- G $4\sqrt{3}$
- H $-4i\sqrt{3}$
- J $4i\sqrt{3}$

7 A bookstore is selling a popular book. If n is the number of books sold in one month, s is the selling price of each book, and c is the amount the bookstore paid for each book, which system of equations represents the profit, P , per book and the monthly profit, M , of selling the book?

A
$$\begin{cases} P = c - s \\ M = nc - s \end{cases}$$

B
$$\begin{cases} P = s - c \\ M = ns - c \end{cases}$$

C
$$\begin{cases} P = c - s \\ M = n(c - s) \end{cases}$$

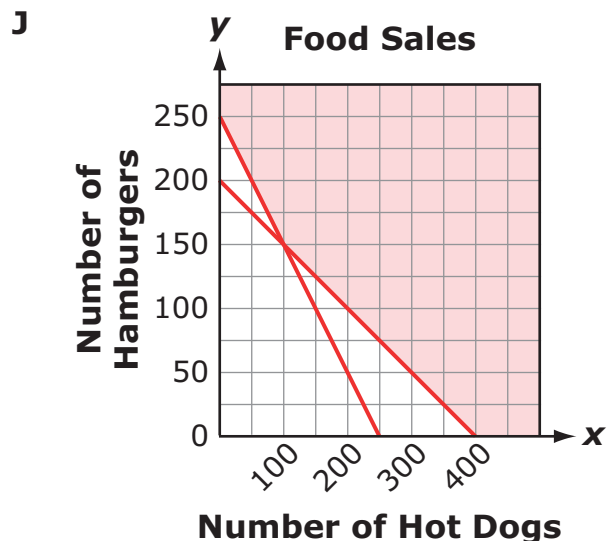
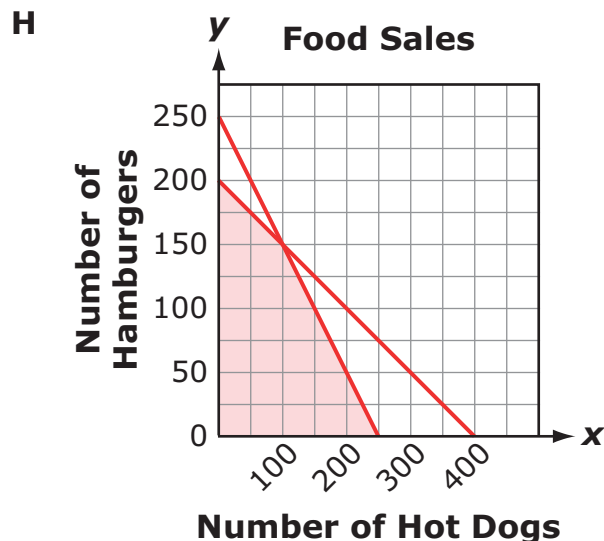
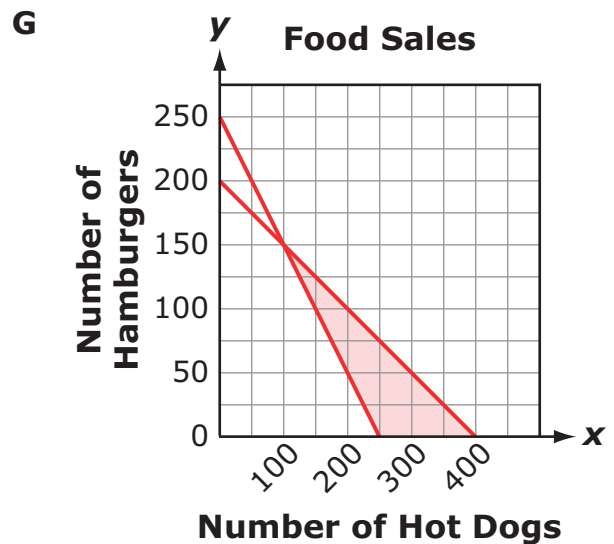
D
$$\begin{cases} P = s - c \\ M = n(s - c) \end{cases}$$

Section 1

- 8 A group of high school students wants to earn at least \$200 in profits by selling no more than a total of 250 hot dogs and hamburgers at a basketball game.

$$\begin{cases} x + y \leq 250 \\ 0.50x + 1.00y \geq 200 \end{cases}$$

This system of inequalities represents the number of hot dogs, x , and the number of hamburgers, y , the students can sell to meet their goal. Which graph represents this situation?



9 What is the solution set to the equation $3x^2 - 2x - 5 = 0$?

A $\left\{1, \frac{5}{3}\right\}$

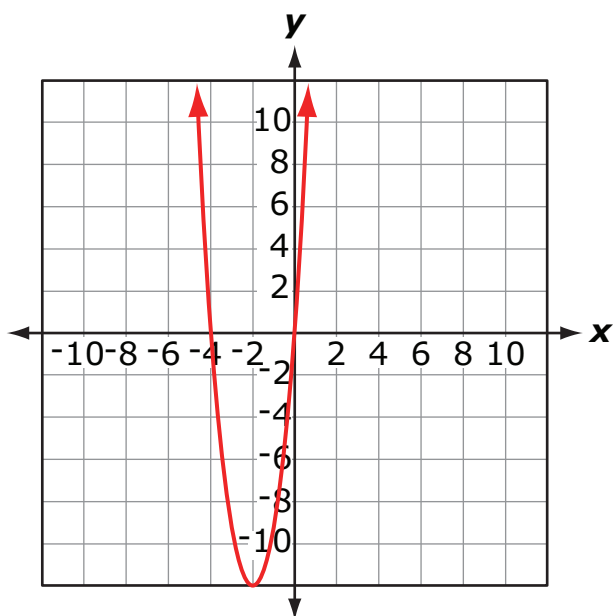
B $\left\{1, -\frac{5}{3}\right\}$

C $\left\{-1, \frac{5}{3}\right\}$

D $\left\{-1, -\frac{5}{3}\right\}$

Section 1

10



Which equation is represented by this graph?

F $y = (x + 2)^2 - 12$

G $y = x^2 + 4x - 8$

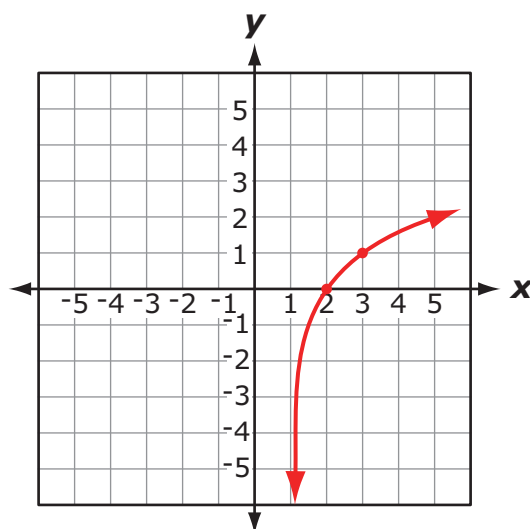
H $y = 3x^2 + 12x$

J $y = \frac{1}{3}x(x + 4)$

11 The length of a rectangle is 2 more than five times its width. If the area of the rectangle is 51, what is its width?

- A 3
- B 3.4
- C 17
- D 19

12



Which equation is represented by this graph?

- F $y = \log_2 x + 1$
- G $y = \log_2 x - 1$
- H $y = \log_2(x + 1)$
- J $y = \log_2(x - 1)$

Section 1

13 What is the logarithmic equivalent of $5^{3m} = 8$?

- A $\log_8(3m) = 5$
- B $\log_5(3m) = 8$
- C $\log_8 5 = 3m$
- D $\log_5 8 = 3m$

14 Mr. Foster is starting a new job. His salary for the first year is \$30,000. He will receive a 5% raise each year after that. Which explicit formula defines Mr. Foster's salary, s , for the n th year?

- F $s = 30,000(0.05)^{n-1}$
- G $s = 30,000(1.05)^{n-1}$
- H $s = 30,000 + 0.05(n - 1)$
- J $s = 30,000 + 1.05(n - 1)$

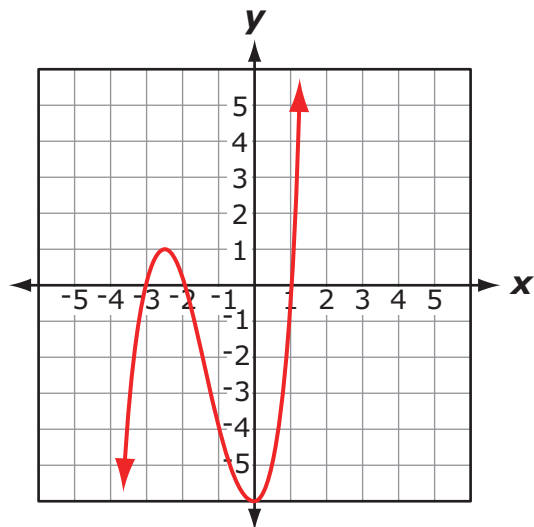
15

$$f(x) = x^3 + x^2 - 4x - 4$$

Which of these is a root of $f(x)$?

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

16



What is the set of x-intercepts for this polynomial function?

- F $\{(-6, 0)\}$
- G $\{(-6, 0), (1, 0)\}$
- H $\{(-3, 0), (-2, 0), (1, 0)\}$
- J $\{(-6, 0), (-3, 0), (-2, 0), (1, 0)\}$

Section 1

17

$$\frac{y}{y^2 - 16} - \frac{1}{y + 4} = 4$$

What is the solution to this equation?

- A $y = -4.12$
- B $y = 4.12$
- C $y = \pm\sqrt{17}$
- D $y = \pm 17$

18 The magnetic force, measured in Newtons, between two objects at a distance of r meters is modeled by the function $F(r)$.

$$F(r) = \frac{3}{r^2}$$

If the magnetic force between two objects is 27 Newtons, what is the distance, r ?

- F $\frac{1}{9}$ meters
- G $\frac{1}{3}$ meters
- H 3 meters
- J 9 meters

19 Which of these observations would be consistent with an exponential model of population growth?

- A The population grew very quickly but then declined.
- B The population is observed to increase steadily over time.
- C The population is observed to increase at a faster rate as time passes.
- D The population started out large, decreased in size, then became large again.

20

x	-3	-2	-1	0	1	2	3
y	$-\frac{1}{8}$	$-\frac{1}{4}$	$-\frac{1}{2}$	-1	-2	-4	-8

Which type of equation best models the data in this table?

- F exponential
- G linear
- H logarithmic
- J quadratic

Section 1

- 21** Margie completes the first question on an essay test in 6 minutes. She completes the second question on the test in 8 minutes. She completes the third question on the test in 10 minutes, and so forth. How long does Margie take to complete the first 10 questions on the essay test?

Arithmetic Sequences & Series

$$n^{\text{th}} \text{ term: } a_n = a_1 + (n - 1)d$$

$$\text{Sum: } s_n = \frac{n}{2}(a_1 + a_n)$$

Geometric Sequences & Series

$$n^{\text{th}} \text{ term: } a_n = a_1 r^{(n-1)}$$

$$\text{Sum: } s_n = \frac{a_1(1-r^n)}{(1-r)}$$

- A** 300 minutes
- B** 290 minutes
- C** 150 minutes
- D** 24 minutes

22 What is the value of x in the geometric sequence $\left\{x, 2, -\frac{1}{2}, \frac{1}{8}, \dots\right\}$?

Arithmetic Sequences & Series

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Geometric Sequences & Series

$$n^{\text{th}} \text{ term: } a_n = a_1 r^{(n-1)}$$

$$\text{Sum: } s_n = \frac{a_1(1-r^n)}{(1-r)}$$

F -8

G -2

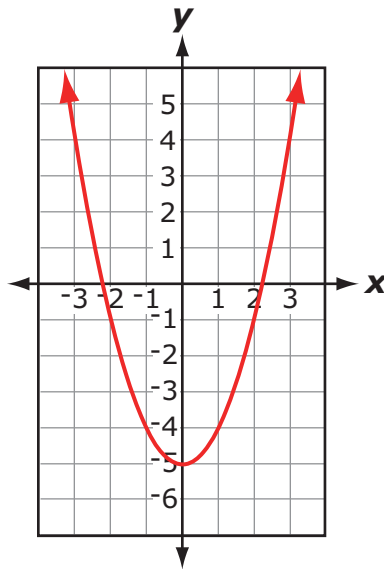
H $-\frac{1}{4}$

J $-\frac{1}{2}$

Section 1

Use the information below to answer Numbers 23 through 25.

This is a graph of $h(x) = x^2 - 5$.



23 Which term describes this graph?

- A** circle
- B** ellipse
- C** hyperbola
- D** parabola

24 Which function is the inverse of $h(x)$?

F $h^{-1}(x) = \frac{1}{x^2 - 5}$

G $h^{-1}(x) = x^2 + 5$

H $h^{-1}(x) = \sqrt{x} + 5$

J $h^{-1}(x)$ is not a function.

25 If $h(x) = f(g(x))$, how could $f(x)$ and $g(x)$ be defined?

A $f(x) = x - 5$ and $g(x) = x^2$

B $f(x) = x^2$ and $g(x) = -5$

C $f(x) = x^2$ and $g(x) = x - 5$

D $f(x) = x^2 - 5$ and $g(x) = 1$



STOP

END OF SECTION 1

