

2009 Algebra II SR (Released Form)

CLE: analyze exponential and logarithmic functions by investigating rates of change, intercepts and asymptotes

DOK Level: 2

21.

What is the vertical asymptote of the graph of $y = \log_4(x - 3)$?

A) $x = -3$

B) $x = 0$

C) $x = 3$

D) $x = 4$

2009 Algebra II SR (Released Form)

CLE: apply statistical measures of center to solve problems

DOK Level: 2

22.

Company A's public relations manager needs information for an ad campaign. The monthly profits through August for Company A are given in the table below.

Monthly Profits

Company A
\$2,750,000
\$2,900,000
\$2,850,000
\$2,750,000
\$2,900,000
\$2,750,000
\$3,150,000
\$2,850,000

Which measure would *best* emphasize the success of the company?

- A) mean
- B) median
- C) mode
- D) range

2009 Algebra II SR (Released Form)

CLE: use and solve equivalent forms of equations and inequalities

DOK Level: 2

23.

What is the value of x in the equation below?

$$2(10x + 8) - 1 = 5(x - 6)$$

A) $x = -3$

B) $x = -\frac{13}{15}$

C) $x = \frac{3}{5}$

D) $x = 3$

2009 Algebra II SR (Released Form)

CLE: compare and contrast various forms of representations of patterns
DOK Level: 2

24.

How are functions f and g alike?

$$f(x) = x(x + 3)(x + 5)$$

$$g(x) = x^3 + x^2 + 2x + 24$$

- A) They both have 3 real zeros.
- B) They are both cubic functions.
- C) They both have an imaginary root.
- D) They are both exponential functions.

2009 Algebra II SR (Released Form)

CLE: use real numbers and various models, drawing, etc. to solve problems

DOK Level: 2

25.

If $x = 2$ and $y = 3$, what is the value of $\frac{3x^2y^0}{5x^{-1}y^2}$?

A) 0

B) $\frac{2}{15}$

C) $\frac{8}{15}$

D) $\frac{24}{25}$

2009 Algebra II SR (Released Form)

CLE: describe the effects of parameter changes on functions

DOK Level: 2

26.

How does the graph of the function $f(x) = x^3 + 1$ compare to the parent function $f(x) = x^3$?

- A) shifted up 1 unit
- B) shifted down 1 unit
- C) shifted left 1 unit
- D) shifted right 1 unit

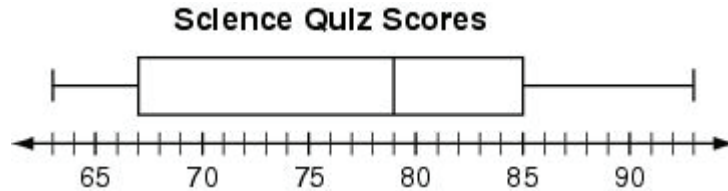
2009 Algebra II SR (Released Form)

CLE: select and use appropriate graphical representation of data and given one-variable quantitative data, describe its shape and calculate summary statistics

DOK Level: 3

27.

A class of twenty students was to take a science quiz. Four students were absent. The teacher created the following box-and-whisker plot of the 16 scores she received.



The next day the 4 absent students took the quiz. If their scores were 63, 64, 92, and 93, what effect would this have on the lower quartile, the median, and the upper quartile?

- A) The median would increase, but the upper and lower quartile would stay the same.
- B) The median would increase, the upper quartile would decrease, and the lower quartile would increase.
- C) The median would stay the same, the upper quartile would decrease, and the lower quartile would increase.
- D) The median would stay the same, the upper quartile would increase or stay the same, and the lower quartile would decrease or stay the same.

2009 Algebra II SR (Released Form)

CLE: compare properties of linear, exponential, logarithmic and rational functions
DOK Level: 2

28.

Ms. Juarez showed the graphs of the functions $y = \log_2 x$ and $y = \log_4 x$ to her students. Which conclusion is *incorrect*?

- A) The x -intercept of each graph is 0.
- B) The graphs never intersect the y -axis.
- C) The domain of each function is $\{x : x > 0\}$.
- D) The range of each function is $\{y : \text{all real numbers}\}$.

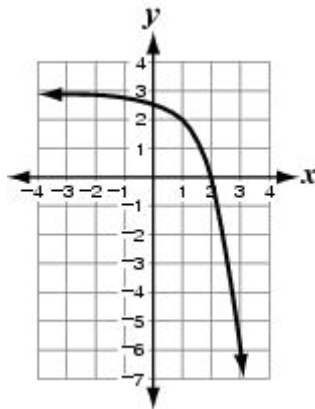
2009 Algebra II SR (Released Form)

CLE: analyze exponential and logarithmic functions by investigating rates of change, intercepts and asymptotes

DOK Level: 2

29.

Which function is represented by the graph?



A) $y = -3^x + 3$

B) $y = -\left(\frac{1}{3}\right)^x + 3$

C) $y = -3^{x-1} + 3$

D) $y = -\left(\frac{1}{3}\right)^{x-1} + 3$

2009 Algebra II SR (Released Form)

CLE: apply statistical measures of center to solve problems

DOK Level: 3

30.

Which data set has a mean less than or equal to 80, a median of 40, and a mode of 75?

- A) {25, 30, 35, 40, 74, 75, 80}
- B) {15, 40, 40, 75, 76, 77, 80}
- C) {0, 38, 39, 40, 75, 75, 300}
- D) {20, 30, 35, 40, 75, 75, 100}

2009 Algebra II SR (Released Form)

CLE: compare and order rational and irrational numbers, including finding their approximate locations on a number line

DOK Level: 1

31.

Which list shows the numbers $-\sqrt{8}$, $|-8|$, $\frac{1}{8}$, -8.35 , $\sqrt[3]{8}$, and $-8\frac{3}{5}$ in ascending order?

A) $-8\frac{3}{5}$, -8.35 , $|-8|$, $-\sqrt{8}$, $\frac{1}{8}$, $\sqrt[3]{8}$

B) $-8\frac{3}{5}$, -8.35 , $-\sqrt{8}$, $\frac{1}{8}$, $\sqrt[3]{8}$, $|-8|$

C) -8.35 , $-8\frac{3}{5}$, $-\sqrt{8}$, $\frac{1}{8}$, $\sqrt[3]{8}$, $|-8|$

D) $|-8|$, $\sqrt[3]{8}$, $\frac{1}{8}$, $-\sqrt{8}$, -8.35 , $-8\frac{3}{5}$

2009 Algebra II SR (Released Form)

CLE: identify quantitative relationships and determine the type(s) of functions that might model the situation to solve the problem

DOK Level: 2

32.

In an experiment, the distance traveled by an object varies directly with the rate the object is traveling. Which type of function would be used to represent this relationship?

A) cubic

B) linear

C) quadratic

D) absolute value

2009 Algebra II SR (Released Form)

CLE: use real numbers and various models, drawing, etc. to solve problems

DOK Level: 2

33.

What is the solution to $|x - 3| = 7$?

A) $x = -10, 4$

B) $x = -10, 10$

C) $x = -4, 4$

D) $x = -4, 10$

2009 Algebra II SR (Released Form)

CLE: describe the effects of parameter changes on functions

DOK Level: 2

34.

Which equation represents the graph of a parabola that opens up and is wider than the graph of $y = x^2$?

A) $y = 2x^2 + 3x - 5$

B) $y = \frac{1}{2}x^2 + 3x - 5$

C) $y = -2x^2 + 3x - 5$

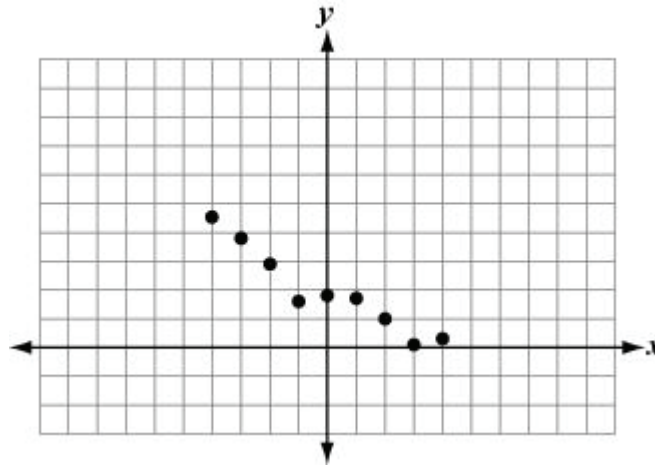
D) $y = -\frac{1}{2}x^2 + 3x - 5$

2009 Algebra II SR (Released Form)

CLE: given a scatterplot, determine a type of function which models the data
DOK Level: 2

35.

Which equation *best* models the data in the scatterplot?



A) $y = -x + 2$

B) $y = -2x + 2$

C) $y = -\frac{1}{2}x + 2$

D) $y = -\frac{1}{4}x + 1$

2009 Algebra II SR (Released Form)

CLE: use symbolic algebra to represent and solve problems that involve exponential, quadratic and logarithmic relationships

DOK Level: 2

36.

Which value of x is the solution to $100^{x+6} = 1000^{2x+3}$?

A) $\frac{3}{10}$

B) $\frac{3}{4}$

C) 3

D) 30

2009 Algebra II SR (Released Form)

CLE: generalize patterns using explicitly or recursively defined functions
DOK Level: 2

37.

Which recursive rule describes the sequence 3, 7, 11, 15, ... ?

a_1 = first term
 a_n = n th term
 a_{n-1} = previous term

A) $\begin{cases} a_1 = 3 \\ a_n = 3a_{n-1} - 2 \end{cases}$

B) $\begin{cases} a_1 = 3 \\ a_n = 4a_{n-1} - 5 \end{cases}$

C) $\begin{cases} a_1 = 3 \\ a_n = 2a_{n-1} + 1 \end{cases}$

D) $\begin{cases} a_1 = 3 \\ a_n = a_{n-1} + 4 \end{cases}$

2009 Algebra II SR (Released Form)

CLE: use and describe the concepts of conditional probability and independent events and how to compute the probability of a compound event

DOK Level: 2

38.

Ms. Smith has 30 students in her class: 20 are boys and 10 are girls. Mr. Jones also has 30 students in his class: 15 are boys and 15 are girls. One student is selected from each class to be on the student council. What is the probability that 2 boys are selected?

A) $\frac{1}{6}$

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

C) $\frac{1}{2}$

D) $\frac{7}{12}$

2009 Algebra II SR (Released Form)

CLE: use and solve systems of linear and quadratic equations or inequalities with 2 variables

DOK Level: 2

39.

Tickets for the school play cost \$5 for adults and \$3 for students. On opening night, 150 tickets were sold and \$560 was collected. How much was collected from the sale of student tickets?

A) \$55

B) \$95

C) \$275

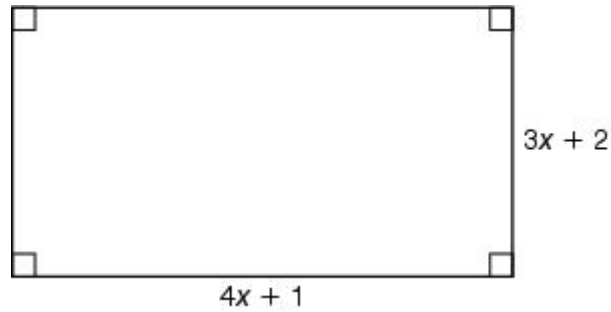
D) \$285

2009 Algebra II SR (Released Form)

CLE: use real numbers and various models, drawing, etc. to solve problems
DOK Level: 2

40.

The dimensions of a rectangle are given in the diagram below.



If $x = \sqrt{7}$, what is the perimeter of the rectangle?

- A) $3 + 7\sqrt{7}$
- B) $10\sqrt{7}$
- C) $6 + 14\sqrt{7}$
- D) $20\sqrt{7}$