EOCT Question of the Day

Sarah's younger siblings are always bothering her when she does her homework, and she begins to wonder whether other students have the same trouble. She surveys 25 of her fellow juniors and records the number of siblings and the homework grades for each of them.

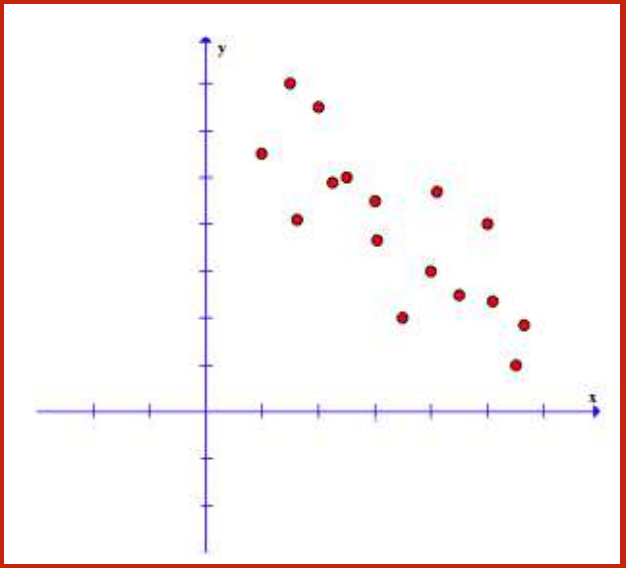
According to the scatterplot Sarah produced from this data, which conclusion is MOST justified? [Note: x is the number of siblings, y is the homework grade.]

A) **Siblings have little or no effect on homework performance.**

B) **Siblings have a positive effect on homework performance.**

C) **Siblings have a negative effect on homework performance.**

D) **Siblings have a mixed effect on homework performance.**



EOCT Question of the Day

The equation $y = 2x + 1$ is changed to $y = 2x - 1$. How does this change the graph of the line?

A) The original line will shift down 1 unit.

B) The original line will shift left 1 unit.

C) The original line will shift left 2 units.

D) The original line will shift down 2 units.

Coordinate Algebra
EOCT REVIEW

UNIT 3 – Linear & Exponential Functions

Question 1

Function vs. Relation

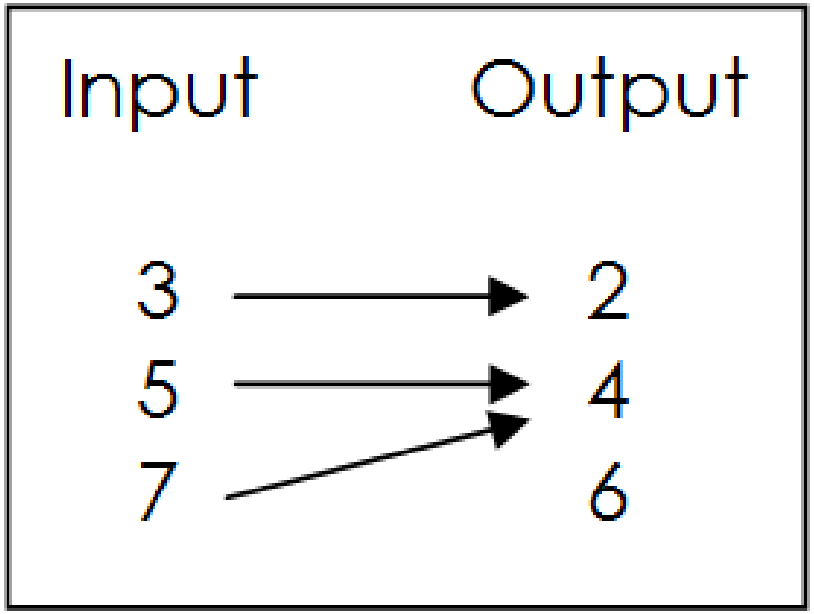
Is this a function?

(-1, 2), (8, -4), (12, 3), (12, -3)

No, 12 has two outputs.

Question 2 Function vs. Relation

Is this a function?



Yes, each input has one output..

Question 3

Evaluate Functions

Evaluate $f(x) = 5(3^x) + 1$ for $x = 3$.

136

Question 4

Combining Functions

If $f(x) = 6x^2 - 3x + 5$ and $g(x) = 4x^2 + 5x - 8$, find $(g - f)(x)$.

$$-2x^2 + 8x - 13$$

Question 5

Exponential, Linear, or Neither

Each term in a sequence is exactly ½ of the previous term.

Exponential.

Question 6

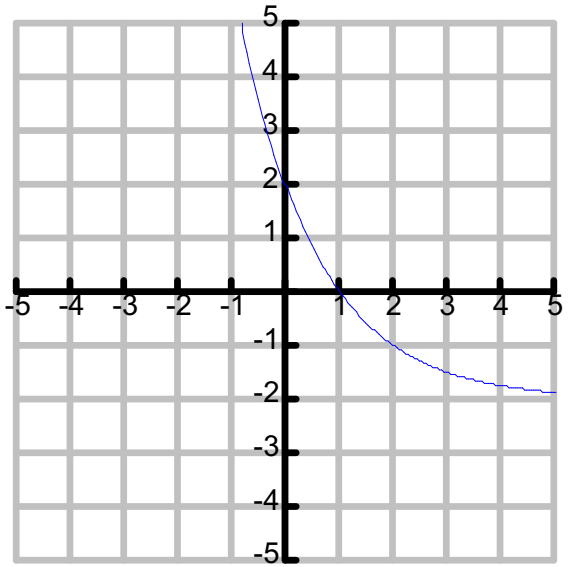
Exponential, Linear, or Neither

This function is decreasing at a constant rate.

Linear

Question 7

What is happening to y as x increases for the graph?



y decreases

Question 8

Find the rate of change:

$f(x) = -2x + 4$ when $x_1 = 2$ and $x_2 = -3$

$ROC = -2$

Question 9

Write an explicit and recursive rule for the nth term. Find a_{50}.

1, 5, 9, 13, …

$$explicit: a_n = 4n - 3$$

$$recursive: a_1 = 1,\ a_n = a_{n-1} + 4$$

$$a_{50} = 197$$

Question 10

Write an explicit and recursive rule for the nth term. Find a_8.

8, 16, 32, 64,…

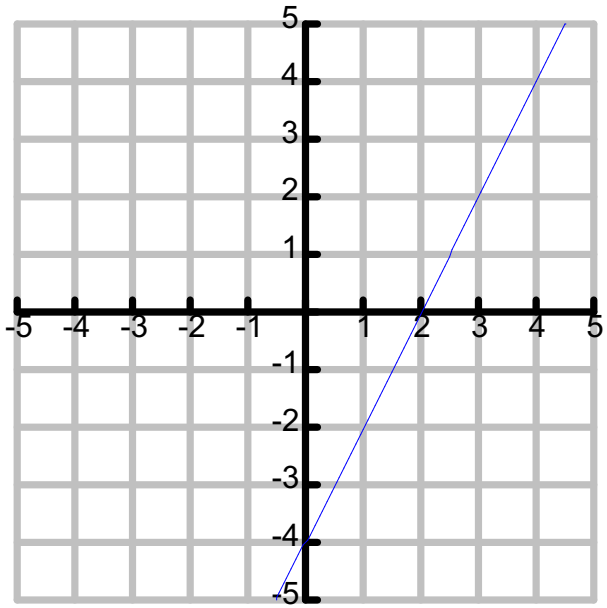
$$explicit: a_n = 8(2)^{n-1}$$

$$recursive: a_1 = 8,\ a_n = 2a_{n-1}$$

$$a_8 = 1024$$

Question 11

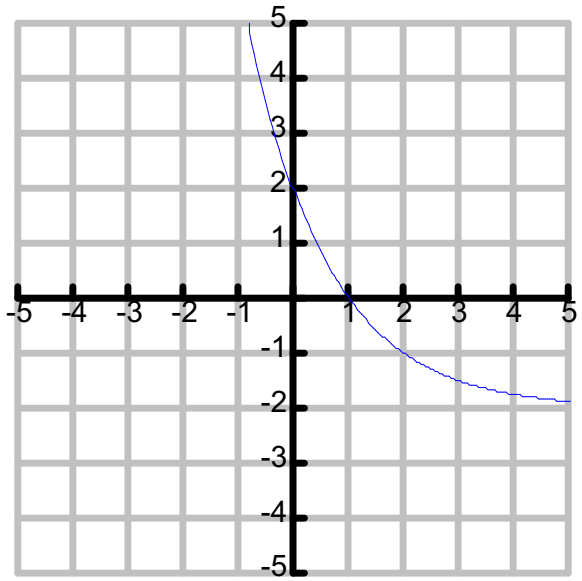
Describe the domain:



$(-\infty, \infty)$

Question 12

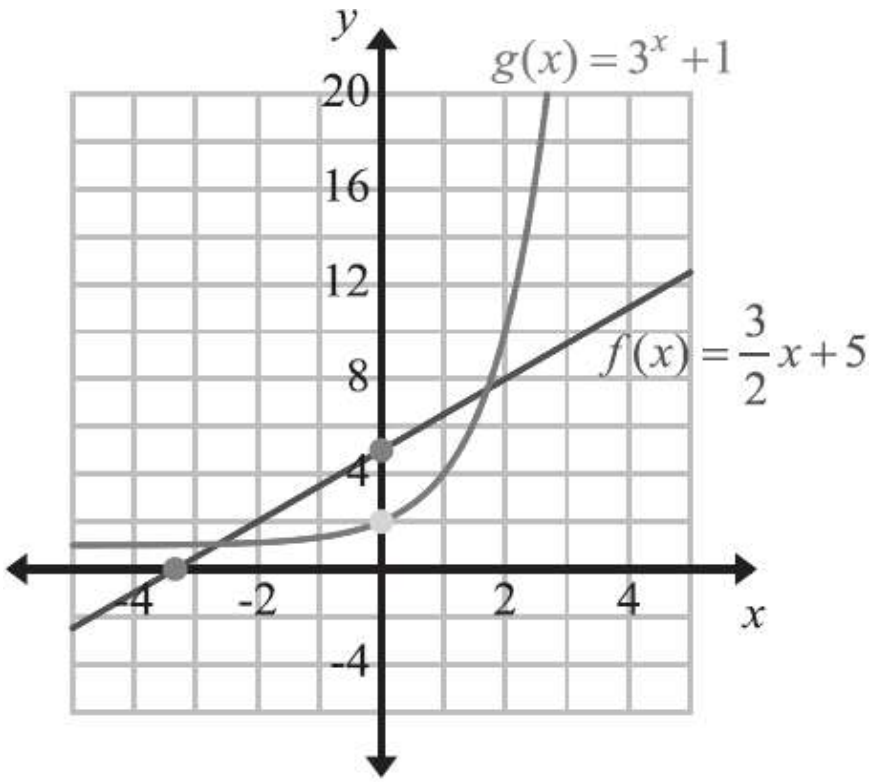
What is the asymptote for the function?



$y = -2$

Question 13

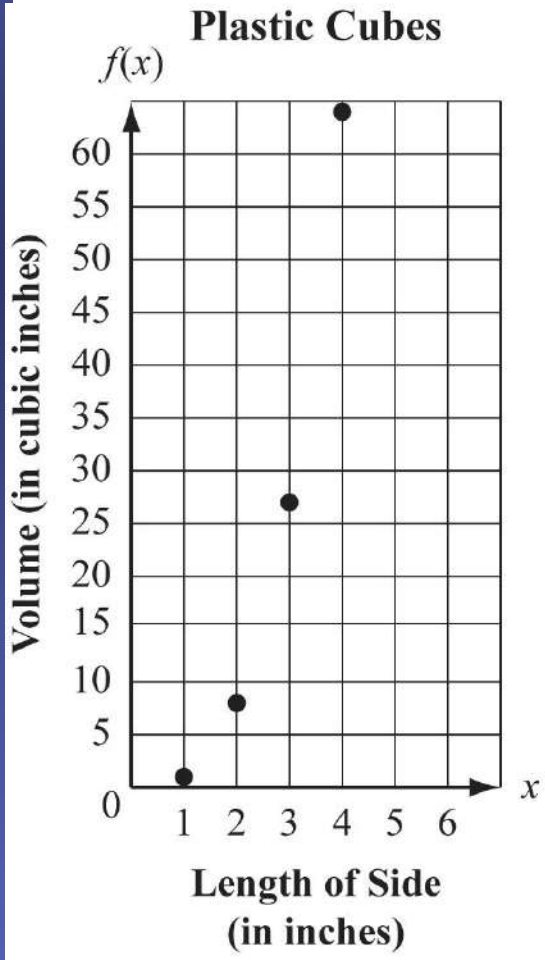
Compare the y-intercepts of the following two functions.



g(x) has a smaller y – intercept at (0,1) and f(x) has a greater y – intercept at (0,5)

Question 14

Is this function discrete or continuous?



discrete

Question 15

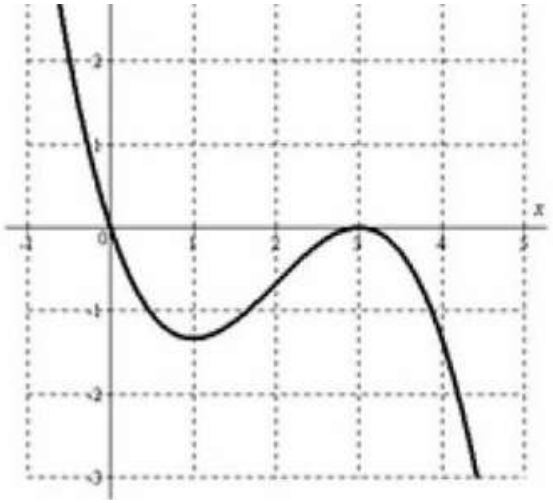
Given the graph, which of the following are *true*?

I. $f(x)$ is increasing on the interval $1 < x < 3$.

II. $f(x)$ has exactly 2 zeros from $-1 \leq x \leq 5$.

III. $f(x)$ is decreasing on the interval $0 < x < 2$.

IV. $f(x)$ has a local maximum at $x = 3$.



A. I and II

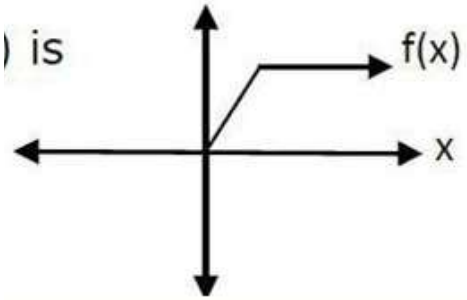
B. I and III

C. I and IV

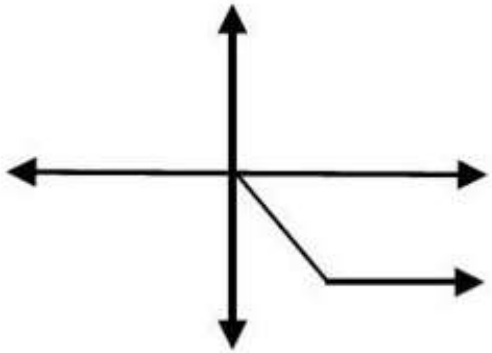
D. I, II, and IV

Question 16

If the graph of f(x) is,



What does –f(x) look like?



Question 17

Ely decides to join a gym. Buff Bodies charges $50 sign-up fee plus $30 a month. Mega Muscles charges $10 sign-up fee plus $40 a month.

Write a function for the cost of each gym membership.

$$B(x) = 30x + 50$$

$$M(x) = 40x + 10$$

Question 18

Ely decides to join a gym. Buff Bodies charges $50 sign-up fee plus $30 a month. Mega Muscles charges $10 sign-up fee plus $40 a month.

Will these two functions ever intersect? If so, where? What does this mean?

(4,170)

After 4 months, they will charge the same amount.

Question 19

For Christmas you get an iPhone 5 worth $800. Every month the value decreases by 5% with all the new products coming out.

Write an exponential equation describing the situation.

How much is the phone worth in 3 years?

$y = 800(1 - .05)^x$

$685.90

Question 20

Matt made $3,000 last summer coach tennis camps. He wants to continue this business in the following years. He hopes that his profit will increase 12% each year.

Write an equation to describe this situation.

What is the growth/decay factor?

How much will he make in 4 years?

$y = 3000(1+.12)^x$

Growth Factor :1.12

$4720.56

Question 21

Describe the transformations

$$g(x) = -4x - 12$$

reflection

stretch by a factor of 4

shift down 12 units

Question 22

Describe the transformations

$$g(x) = \tfrac{1}{4}(3)^{x-2} + 5$$

shrink by a factor of 1/4

shift right two units

shift up five units

Question 23

A manufacturer keeps track of her monthly costs by using a "cost function" that assigns a total cost for a given number of manufactured items, x. The function is C(x) = 5,000 + 1.3x.

a. Can any value be in the domain for this function?

No, because you can't have a negative amount of items.

b. What is the cost of 2,000 manufactured items?

7600

c. If costs must be kept below $10,000 this month, what is the greatest number of items she can manufacture?

3846

Question 24

If $f(x) = 2x^2 - 4x - 7$, $g(x) = -x^2 - 3x + 5$, *and* $h(x) = 4x^2$

find $2g(x) + 3f(x)$.

$4x^2 - 18x + 11$

Question 25

If $f(x) = 2x^2 - 4x - 7$, $g(x) = -x^2 - 3x + 5$, *and* $h(x) = 4x^2$ find $h(x) \bullet f(x)$.

$8x^4 - 16x^3 - 28x^2$

Work

Worksheet Unit 3