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Course: AIR Algebra I (supplement)
Unit: Algebra Short Cycle #1

Answer the following questions below:

1) Karen is applying for the nursing school at the University of Davis. Before applying, she received a breakdown for the tuition and fees from the university.

- a. Tuition: \$727 per semester plus \$153 per class
- b. Books: \$83 per class
- c. Nursing School Fee: \$18 per class
- d. Parking: \$62 per semester
- e. Facilities Fee: \$56 per semester

The total cost of a semester for c classes is represented by the following expression

$$\$254c + \$845$$

What statement best describes the coefficient of c ? Required

- A) It is the total semester cost of c classes at the university.
- B) It is the sum of the tuition, parking and facilities fee.
- C) It is the sum of the additional cost of tuition, books and nursing school fee.
- D) It is the sum of the cost of books and the nursing school fee.

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2) Julia is buying groceries. She buys some cans of soup that cost \$1.50 each. She spends \$23.75 on the rest of her groceries. Her total bill (before tax) is \$34.25.

A. Write an equation that models Julia's grocery bill.

B. How many cans of soup can Julia buy? Required

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3) Solve for z .

$$y + w - \frac{3}{4}z = 0$$

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4) Solve the Energy Formula for c . $E = mc^2$

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5) Jessica made an error in her solving below.


- Given: $5(x + 2) = 3(x + 4)$
- Step 1: $5x + 10 = 3x + 12$
- Step 2: $8x + 10 = 12$
- Step 3: $8x = 2$
- Step 4: $x = 1/4$

A. Which step is the first incorrect step?

B. Find the solution to the original problem. **Required**

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6) Solve the following equation for x , and express its value in terms of c .

$$3(cx - 7) = 9$$

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7) George is helping the manager of the local produce market expand her business by distributing flyers around the neighborhood. He gets paid \$20 a day as well as \$0.05 for every flyer he distributes. George would like to earn at least \$65 each day. Create an inequality that models this situation.

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8) Solve the following inequality. Required

$$\frac{k}{-3} - 7 \geq 5$$

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9) A shipping company charges a cost per pound plus a fixed fee to ship a package. The total cost, $f(x)$, in dollars, of shipping x pounds is modeled by the function shown.

$$f(x) = 4.99x + 5.75$$

Which part of the function represents the fixed fee?

Required

A) 5.75

- B) 4.99
 C) x
 D) 4.99x

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10) Marcus works as a salesman at a car dealership. He is paid a base salary of \$1,123.58 each month, and he receives a commission of \$234.13 for each vehicle he sells. If last month Marcus earned \$9,318.13, how many cars did he sell last month? **Required**

- A) 80
 B) 70
 C) 35
 D) 32


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11) Sally is buying t-shirts for her and her friends. Each t-shirt costs \$8.25 plus a fixed delivery charge of \$5.15. Sally can spend at most \$53 for everything. How many t-shirts can she buy without going over her total amount? **Required**

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12) Given the following formula, solve for m .

$y = mx + b$ **Required**

- A) $m = x(y - b)$
 B) $m = (y - b)/x$
 C) $m = x(y + b)$
 D) $m = (y + b)/x$

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13) Solve the following equation for x .

$$\frac{5}{3} + \frac{1}{2}x = \frac{2}{5}(x - 7)$$

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Course: AIR Algebra I (supplement)
Unit: Algebra Short Cycle #2

Answer the following questions below:

1) A bounce house event center uses the function below to quote the price of renting a party room with a maximum capacity of 50 guests. In the function, x represents the number of guests invited to the party.

$$Q(x) = \$5x + \$75$$

What is the domain of $Q(x)$?

- A) all integers
- B) all integers greater than or equal to 15
- C) all non-negative integers less than or equal to 50
- D) all integers less than or equal to 50

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2)

Determine if each set of ordered pairs is a function, then state the domain and range.

$$\{(-7, -2), (3, 5), (8, 4), (-6, 5), (-2, -3)\}$$

Domain:


Range:

Function:

Required

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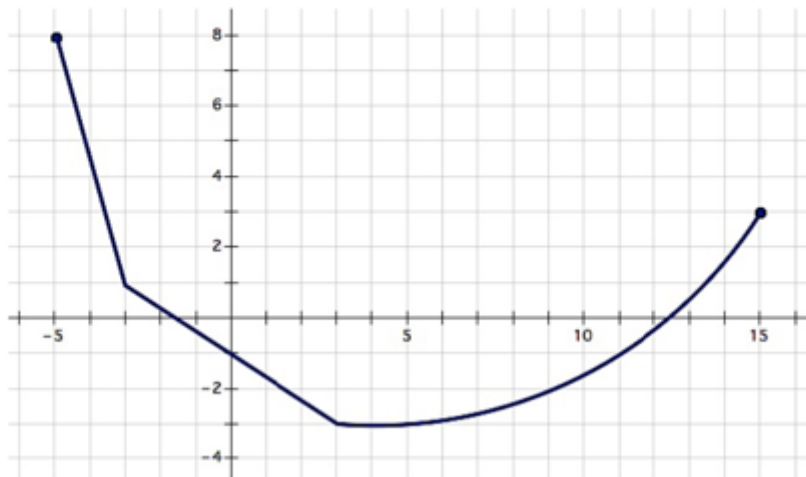
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3) Describe the function in the graph.

A. On which of the following intervals is the function decreasing?



A. $-5 \leq x \leq 15$

B. $-5 \leq x \leq 3$

C. $-5 \leq x \leq -3$

D. $3 \leq x \leq 15$




B. Identify the maximum value of the function.

C. State the domain.

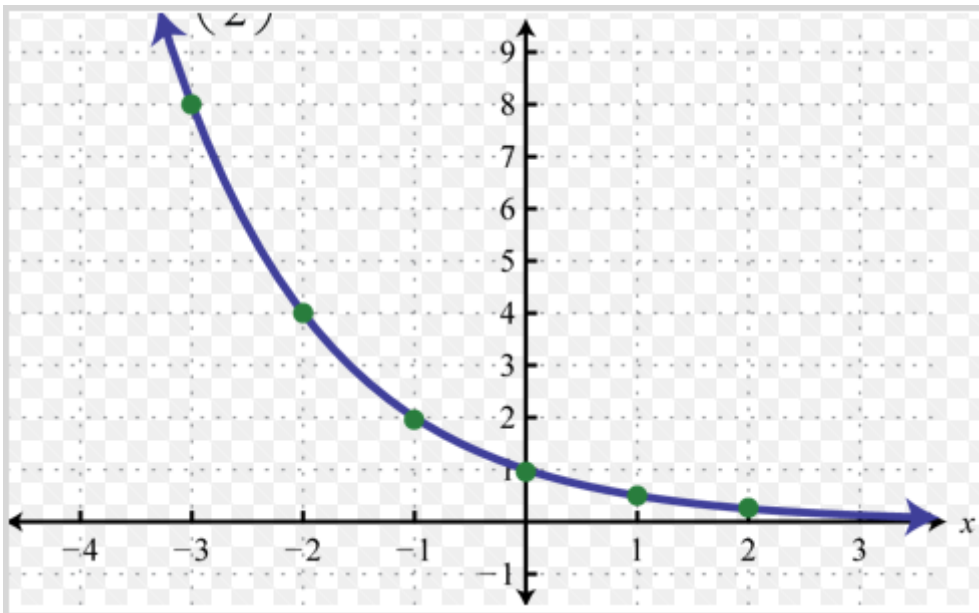
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4) List 4 points that are solutions to the function below.



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5) The students in Mr. Sudvary's class wanted to raise money for a charitable organization that builds houses. They decided to do so by selling stickers and buttons. The students sold stickers for \$2.00 each and buttons for \$2.50 each. Their goal is to raise \$50.

A. If x represents the number of stickers, and y represents the number of buttons, the linear equation for the given scenario is $___x + ___y = ____$.

B. If the students raise exactly \$50, it is possible for them to sell exactly 9 stickers?

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6)


A. Graph the following linear function. Click here to graph. Save and attach your completed graph.

B. State the average rate of change.

$$y = -\frac{3}{4}x + 6$$

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7) Juan buys peaches, p , and grapefruit, g . He writes the equation shown to model the relationship between the number of peaches and number of grapefruit. He spends a total of \$14.99 for all fruit.

$$p + g = 11$$

$$1.58p + 1.09g = 14.44$$

What does the $1.58p$ represent in the problem?

- A) Number of peaches purchased
- B) Cost of a peach
- C) Total number of peaches and grapefruit
- D) The amount Juan spends on peaches

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8) Which equations are equivalent to the linear equation?

$$y = \frac{1}{2}x + 5$$

A. $2y - x = 10$

B. $x - 2y = 10$

C. $2y + x = 10$

D. $2x = 4y + 20$

E. $4y = 2x + 10$

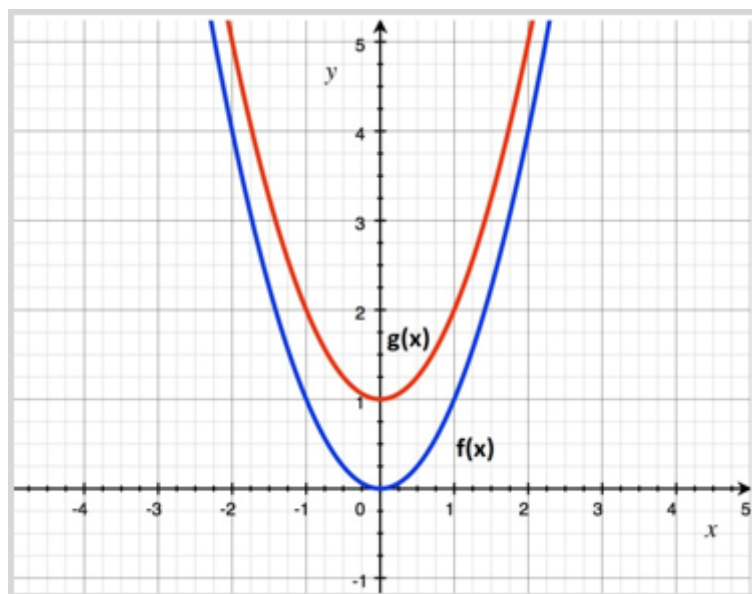
F. $y - 3 = \frac{1}{2}x + 2$

- A) A and B
- B) A, B, and E
- C) A and F
- D) A and D

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9) Function $g(x)$ undergoes a single transformation to create function $f(x)$. The graphs of both $f(x)$ and $g(x)$ are shown. Create $f(x)$ in terms of $g(x)$.

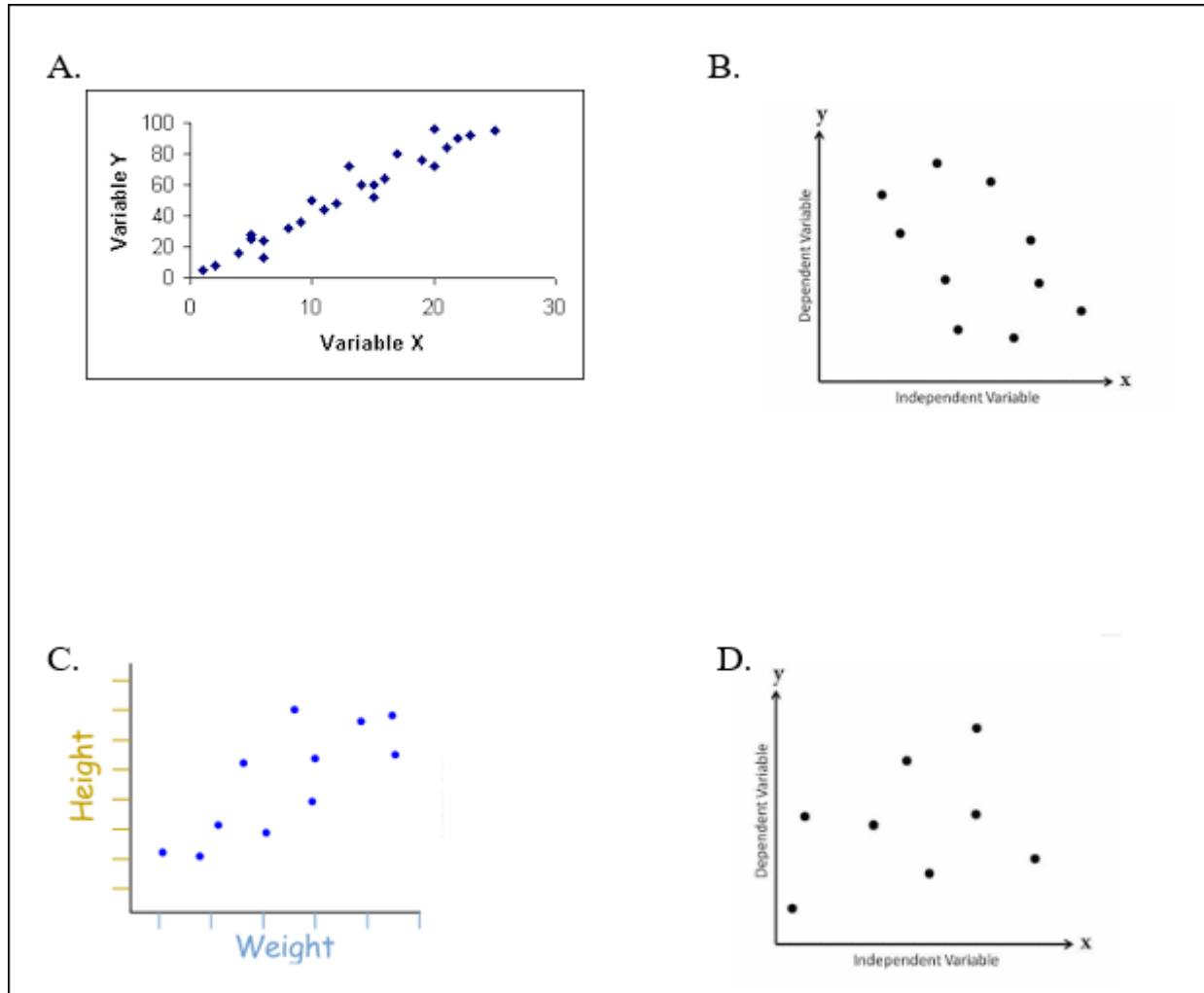


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10) A student calculated the correlation coefficient to be $r = 0.5$. Which scatter plot best represents this correlation coefficient?



- A) Graph A
- B) Graph B
- C) Graph C
- D) Graph D

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For the following two problems, use the data in the table below to make a scatter plot. Click here to print the graph.

Week's since school started	Money in savings
1	200
3	175
4	162
7	120
10	87
13	57
20	5

11) Which statement best describes the correlation coefficient?

- A) Strong negative correlation
- B) Strong positive correlation
- C) Weak positive correlation
- D) No Correlation

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12) Which of the following is the best approximation of the correlation coefficient?

- A) -0.325
- B) 0.9883
- C) 0
- D) -0.9568


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13) Write an expression for a line of best fit for the scatterplot.

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14) A linear model show that the relationship between the number of study hours and the classroom grade has a correlation coefficient of 0.95. Which statement about the variables is true?

- A) Studying more causes the classroom grade to be higher.
- B) There is no relationship between the number the number study hours and the classroom grade.
- C) There is a strong relationship between the number the number study hours and the classroom grade.

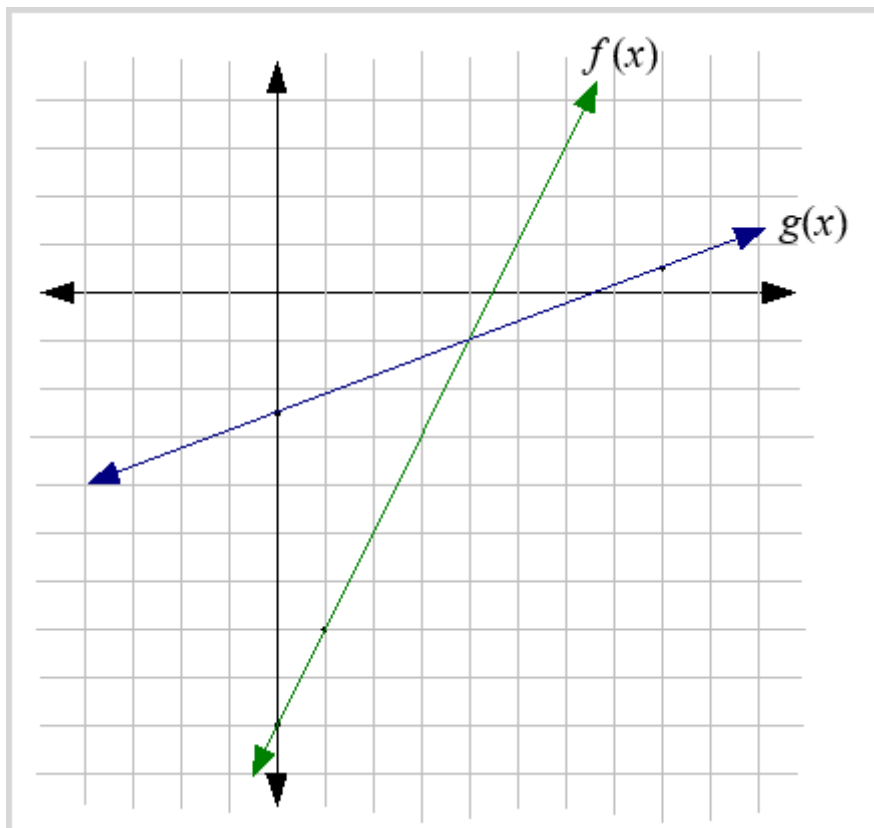
D) The classroom grade will improve the more hours a student's study's.

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15) The graphs of $f(x)$ and $g(x)$ are shown below. Find the value of x such that $f(x) = g(x)$.

$x =$ _____



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16) A. Graph the following system of inequalities. Click here to graph. Save and attach your completed graph.


B. State a solution point.

$$y \leq \frac{2}{3}x - 3$$

$$y > -\frac{1}{2}x + 2$$

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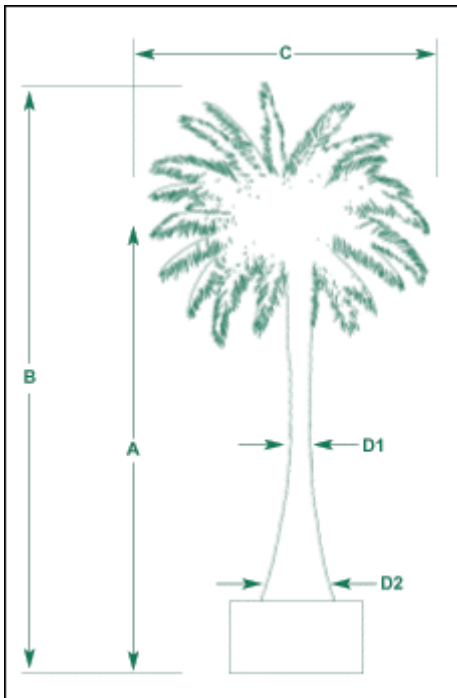
17) The sum of two numbers is 155 and their difference is 43. What are the two numbers?

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18) The height of the tree below over time is given by the function $f(x)$. Which of the following represents the domain of the function?



- A) $0 < x < a$
- B) $0 < x < b$
- C) $0 < x < c$
- D) $0 < x < D1$

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All Finished! Review My Answers

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Course: AIR Algebra I (supplement)
Unit: Algebra Short Cycle #3

Answer the following questions below:

1) Simplify the following expression.

$$(4x^2 + 3x) - (2x^2 - 3x - 7)$$

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2) What is the factored form of the following expression?

$$4x^2 + 12x + 9$$

- A. $(2x + 3)^2$

B. $4(x + 3)^2$

C. $(2x + 3)(2x - 3)$

D. $(2x + 3)(3x - 2)$

- A) Choice A
- B) Choice B
- C) Choice C
- D) Choice D

Attachment(s): None

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3) If John solved the equation $x^2 - 10x + 8 = 0$ by completing the square, one of the steps in his process would be:

- A. $(x - 5)^2 = -8$

B. $(x - 5)^2 = 17$

C. $(x + 4)^2 + 10x$

D. $(x + 4)^2 = 10x + 16$

- A) Choice A
- B) Choice B
- C) Choice C
- D) Choice D

Attachment(s): None

4) What are the solutions for x ?

$$x^2 + 6x = -\frac{11}{4}$$

A. $x = -3$ and $x = 2$

B. $x = -2$ and $x = 3$

C. $x = \frac{1}{2}$ and $x = -\frac{11}{2}$

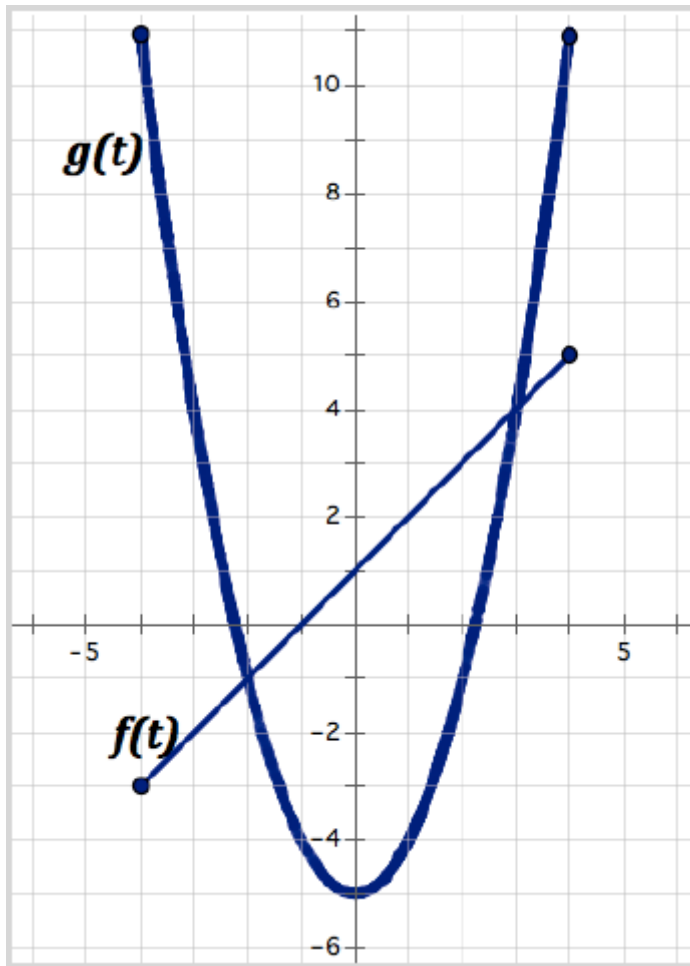
D. $x = -\frac{1}{2}$ and $x = -\frac{11}{2}$

- A) Choice A
 B) Choice B
 C) Choice C
 D) Choice D

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5) What are the solutions to the below system of equations?

 $(_ , _)$ and $(_ , _)$

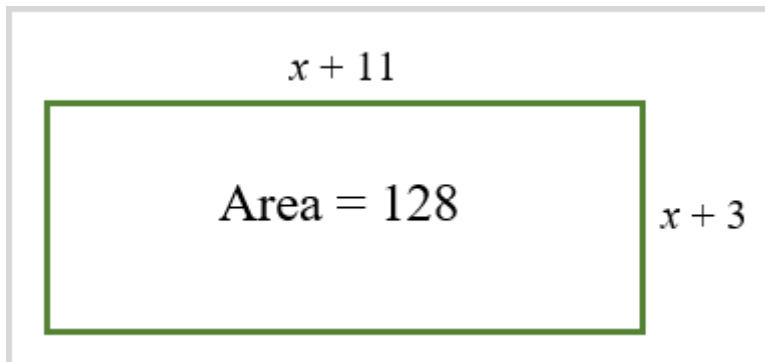


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6) Jessica is creating a rectangular garden measuring a length of $(x + 3)$ and a width of $(x + 11)$. She wants the total area to 128 square feet. Find the value of x .



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7) When full, the volume of water in a fish pond is 657 gallons. Due to a leak in the pond, the volume of water in the pond is decreasing at a rate of 0.8% per minute. If the amount of water in the pond continues to decrease at this rate, create a function, $f(x)$, to model this situation.

 $f(x) =$ _____

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8) The population of a town is represented by the function $P(t) = 12000 \cdot 1.08^t$, where t is the number of years since 2000 and $P(t)$ is the total population. What does the 0.08 mean in the function?

- A) Rate of growth for the population in the town
- B) The rate of decay for the population in the town
- C) The initial population of the town
- D) Number of years since 2000

Attachment(s): None


9) Answer the following questions related to the quadratic given below.

$$y = x^2 - 2x - 3.$$

- A. What is the vertex?
- B. What are the zeroes of the function?
- C. Does the function have a maximum or a minimum?
- D. On which interval is the function increasing?
- E. On which interval is the function decreasing?

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10) Express the terms of the following geometric sequence by giving an explicit formula.

8, 16, 32, 64, 128,

A. $f(n) = 2(8^n)$, where $n = 1, 2, 3, \dots$

B. $f(n) = 2(8)^{n-1}$, where $n = 1, 2, 3, \dots$

C. $f(n) = 8(2^n)$, where $n = 1, 2, 3, \dots$

D. $f(n) = 8(2)^{n-1}$, where $n = 1, 2, 3, \dots$

- A) Choice A
 B) Choice B
 C) Choice C
 D) Choice D

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11) Solve.

Which of the following correctly shows the factored form of the expression $\frac{16}{25}x^2 - \frac{49}{81}d^2$?

A. $(\frac{16}{25}x + \frac{7}{9}d)(\frac{16}{25}x - \frac{7}{9}d)$

B. $(\frac{4}{5}x - \frac{7}{9}d)^2$

C. $(\frac{4}{5} + \frac{7}{9}d)(\frac{4}{5}x - \frac{7}{9}d)$

D. $(\frac{16}{25}x + \frac{49}{81}d)(\frac{16}{25}x - \frac{49}{81}d)$

- A) Choice A
 B) Choice B
 C) Choice C
 D) Choice D

Attachment(s): None

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All Finished! Review My Answers