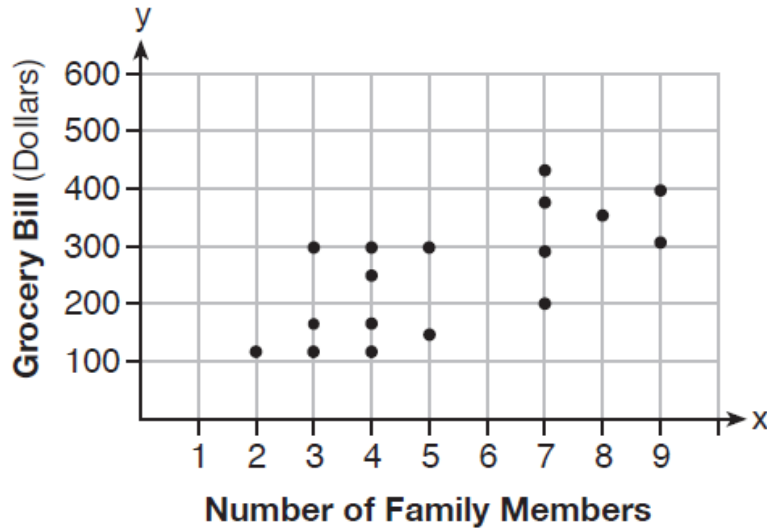


Question 1.

The scatter plot below shows the relationship between the number of members in a family and the amount of the family's weekly grocery bill.



The most appropriate prediction of the grocery bill for a family that consists of six members is

- (1) \$100
- (2) \$300
- (3) \$400
- (4) \$500

Question 2

The function $g(x)$ is defined as $g(x) = -2x^2 + 3x$. The value of $g(-3)$ is

- (1) -27
- (2) -9
- (3) 27
- (4) 45

Question 3.

Which expression results in a rational number?

(1) $\sqrt{121} - \sqrt{21}$

(3) $\sqrt{36} \div \sqrt{225}$

(2) $\sqrt{25} \cdot \sqrt{50}$

(4) $3\sqrt{5} + 2\sqrt{5}$

Question 4.

The math department needs to buy new textbooks and laptops for the computer science classroom. The textbooks cost \$116.00 each, and the laptops cost \$439.00 each. If the math department has \$6500 to spend and purchases 30 textbooks, how many laptops can they buy?

(1) 6

(3) 11

(2) 7

(4) 12

Question 5.

What is the solution to the equation $\frac{3}{5}\left(x + \frac{4}{3}\right) = 1.04$?

(1) $3.0\bar{6}$

(3) $-0.4\bar{8}$

(2) 0.4

(4) $-0.709\bar{3}$

Question 6.

The area of a rectangle is represented by $3x^2 - 10x - 8$. Which expression can also be used to represent the area of the same rectangle?

(1) $(3x + 2)(x - 4)$

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

(2) $(3x + 2)(x + 4)$

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

Question 7.

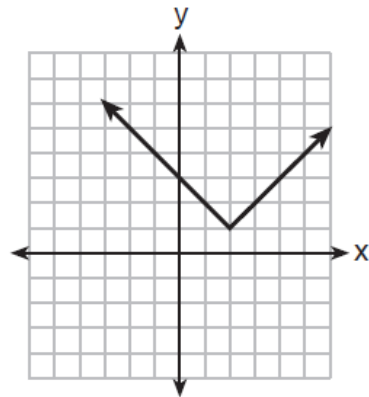
Which relation does *not* represent a function?

x	1	2	3	4	5	6
y	3.2	4	5.1	6	7.4	8.8

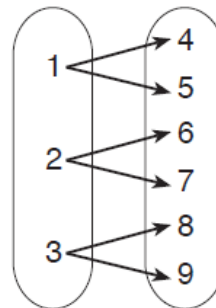
$$y = 3\sqrt{x+1} - 2$$

(1)

(3)



(2)



(4)

Question 8.

Britney is solving a quadratic equation. Her first step is shown below.

$$\text{Problem: } 3x^2 - 8 - 10x = 3(2x + 3)$$

$$\text{Step 1: } 3x^2 - 10x - 8 = 6x + 9$$

Which two properties did Britney use to get to step 1?

- I. addition property of equality
- II. commutative property of addition
- III. multiplication property of equality
- IV. distributive property of multiplication over addition

(1) I and III

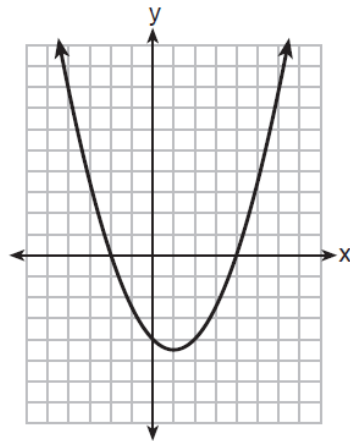
(3) II and III

(2) I and IV

(4) II and IV

Question 9.

The graph of $y = \frac{1}{2}x^2 - x - 4$ is shown below. The points $A(-2,0)$, $B(0,-4)$, and $C(4,0)$ lie on this graph.



Which of these points can determine the zeros of the equation $y = \frac{1}{2}x^2 - x - 4$?

(1) A, only

(3) A and C, only

(2) B, only

(4) A, B, and C

Question 10.

Given the parent function $f(x) = x^3$, the function $g(x) = (x - 1)^3 - 2$ is the result of a shift of $f(x)$

- (1) 1 unit left and 2 units down
- (2) 1 unit left and 2 units up
- (3) 1 unit right and 2 units down
- (4) 1 unit right and 2 units up

Bonus Question

Question 11 a.

Find the zeros of $f(x) = (x - 3)^2 - 49$, algebraically.

Question 11 b.

Nancy, Bryan, and Jamie combined their money to purchase a laptop. Together they paid a total of \$490 for the laptop, including tax.

- Nancy paid \$50 more than Bryan paid.
- Bryan paid twice as much as Jamie paid.

How much did Nancy pay?

- A. \$108
- B. \$176
- C. \$226
- D. \$295