Part I. Multiple Choice. Place the answers to the questions in the boxes below.

1.	2.	3.	4.	5.	6.	7.
2	4	3	2	2	4	2

1. Which expression is equivalent to $(3x^5 + 8x^3) - (7x^2 - 6x^3)$?

                                                           $3x^5 + 8x^3 - 7x^2 + 6x^3$ *Distribute the – sign*

    (1) $-4x^3 + 14$ (3) $-4x^5 + 14x^3$ $3x^5 + 8x^3 - 7x^2 + 6x^3$

                                                           $3x^5 + 14x^3 - 7x^2$

    (2) $3x^5 + 14x^3 - 7x^2$ (4) $3x^5 + 2x^3 - 7x^2$

2. If $(-4, k)$ is a point on the graph of the equation $3x + y = -8$, find the value of k.

    (1) -20 (2) -4 (3) 0 (4) 4 $3x + y = -8$
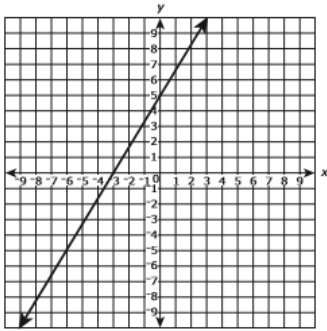
                                                           $3(-4) + y = -8$ *Input = -4   Find y (output)*

                                                           $-12 + y = -8$
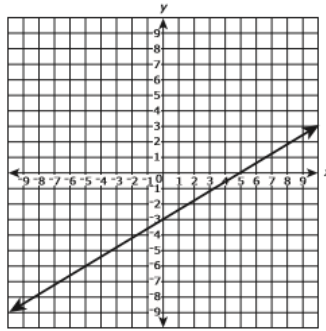
3. Which graph represents the equation $5y - 3x = -15$?   **$y = 4$**

(1)   (3) $5y - 3x = -15$

                                                                                        $+3x$ $+3x$

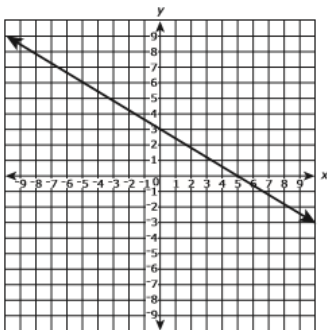 $\dfrac{5y}{5} = \dfrac{3x - 15}{5}$

                                                                                    $y = \dfrac{3}{5}x - 3$

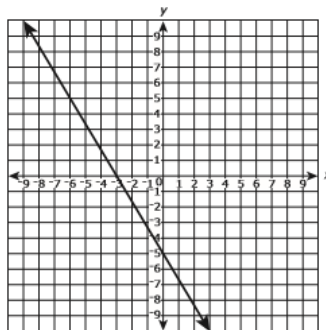(2)   (4) $m = 3/5$ positive slope-line increases

                                                                                    $b = -3$ intersects y-axis at $(0,-3)$

                                                                               Check line on graphing calculator

4. Which expression is equivalent to $(x + 3)^2$?

                                                            $(x + 3)(x + 3)$

    (1) $x^2 + 6$ (3) $x^2 + 9$ $x^2 + 3x + 3x + 9$

                                                            $x^2 + 6x + 9$

    (2) $x^2 + 6x + 9$ (4) $x^2 + 3x + 9$

5. Given the domain $\{0, 1, 2, 3, 4, 5, 6\}$, what is the solution set for the $\vee$ means OR. All solutions
   compound inequality $x < 3 \ \vee \ x \geq 5$?   must make at least one of the

                                                                 inequalities true.

                                                                 $0 < 3$ $2 < 3$ $1 < 3$

   (1) $\{\ \}$ (2) $\{0,1,2,5,6\}$ (3) $\{0,1,2,3,5,6\}$ (4) $\{4,5\}$ $2 < 3$ $5 \geq 5$ $6 \geq 5$

6. What is the <u>largest</u> *integer* that makes the statement $2x - 3 \leq 6$ true?

(1) 4.5

(3) 3

(2) 5

(4) 4

$2x - 3 \leq 6$
$2x \leq 9$
$x \leq 4.5$ ←*not an integer*
The largest integer that is less than or equal to 4.5 is 4

7. Which equation represents the graph of a line parallel to the *y*-axis and 1 unit to the right of it?
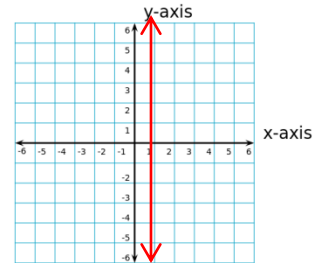
(1) $x = -1$ (2) $x = 1$ (3) $y = 1$ (4) $y = -1$

$x = 1$ is a vertical line. All vertical lines are parallel to the *y*-axis.
$x = 1$ is one unit to the right of the *y*-axis.

Extended Response: Show all work.

8. A high school is having a talent contest and will award prize money for the best 4 acts in the show. First place wins the most money, and each place after that wins $50 less than the previous place. The talent contest has a total of $1,000 in prize money. What is the amount of prize money awarded to each place? *Only an algebraic solution will be accepted.*

x: amount of money awarded to 1st place
x − 50: amount of money awarded to 2nd place
x − 100: amount of money awarded to 3rd place.
x − 150: amount of money awarded to 4th place.

$x + (x - 50) + (x - 100) + (x - 150) = 1000$
$4x - 300 = 1000$
$4x = 1300$
$x = 325$

1st place: $325   **2nd place: $275**   **3rd place: $225**   **4th place: $175**

Check: Each prize amount is 50 less than the previous and 325 + 275 + 225 + 175 = 1000

9. Solve for *x* in $ax^2 - b = c$

$ax^2 - b = c$
    $+b \quad +b$
$\dfrac{ax^2}{a} = \dfrac{c + b}{a}$

$x^2 = \dfrac{c + b}{a}$

$x^2 = \dfrac{c + b}{a}$

$\sqrt{x^2} = \sqrt{\dfrac{c + b}{a}}$

$x = \sqrt{\dfrac{c + b}{a}}$

10. Jerome is constructing a table of values that satisfies the definition of a function.

Input	−13	20	0	−4	11	−1	17	
Output	−15	−11	−9	−2	−1	5	5	13

Which numbers can be placed in the empty cell so that the table of values satisfies the definition of a function? Circle all that apply.

A. -5   B. -1   C. 0   **D. 2**   E. 11   F. 17

Every input must be assigned to exactly one output.