

**Use this space for
computations.**

8 The expression $16x^2 - 81$ is equivalent to

- (1) $(8x - 9)(8x + 9)$ (3) $(4x - 9)(4x + 9)$
(2) $(8x - 9)(8x - 9)$ (4) $(4x - 9)(4x - 9)$

9 The owner of a landscaping business wants to know how much time, on average, his workers spend mowing one lawn. Which is the most appropriate rate with which to calculate an answer to his question?

- (1) lawns per employee (3) employee per lawns
(2) lawns per day (4) hours per lawn

10 A ball is thrown into the air from the top of a building. The height, $h(t)$, of the ball above the ground t seconds after it is thrown can be modeled by $h(t) = -16t^2 + 64t + 80$. How many seconds after being thrown will the ball hit the ground?

- (1) 5 (3) 80
(2) 2 (4) 144

11 Which equation is equivalent to $y = x^2 + 24x - 18$?

- (1) $y = (x + 12)^2 - 162$ (3) $y = (x - 12)^2 - 162$
(2) $y = (x + 12)^2 + 126$ (4) $y = (x - 12)^2 + 126$

12 When $(x)(x - 5)(2x + 3)$ is expressed as a polynomial in standard form, which statement about the resulting polynomial is true?

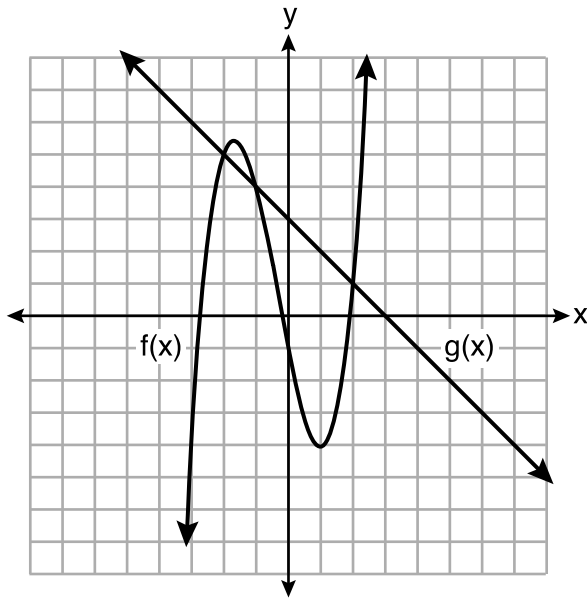
- (1) The constant term is 2.
(2) The leading coefficient is 2.
(3) The degree is 2.
(4) The number of terms is 2.

13 The population of a city can be modeled by $P(t) = 3810(1.0005)^{7t}$, where $P(t)$ is the population after t years. Which function is approximately equivalent to $P(t)$?

- (1) $P(t) = 3810(0.1427)^t$ (3) $P(t) = 26,670(0.1427)^t$
(2) $P(t) = 3810(1.0035)^t$ (4) $P(t) = 26,670(1.0035)^t$

14 The functions $f(x)$ and $g(x)$ are graphed on the set of axes below.

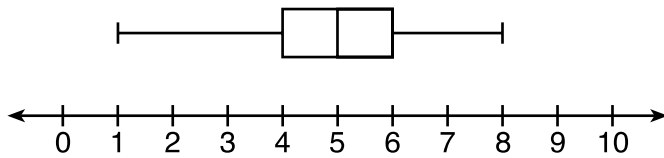
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For which value of x is $f(x) \neq g(x)$?

- (1) -1
- (2) 2
- (3) 3
- (4) -2

15 What is the range of the box plot shown below?



- (1) 7
- (2) 2
- (3) 3
- (4) 4

16 Which expression is *not* equivalent to $2x^2 + 10x + 12$?

- (1) $(2x + 4)(x + 3)$
- (2) $(2x + 6)(x + 2)$
- (3) $(2x + 3)(x + 4)$
- (4) $2(x + 3)(x + 2)$

Use this space for computations.

17 The quadratic functions $r(x)$ and $q(x)$ are given below.

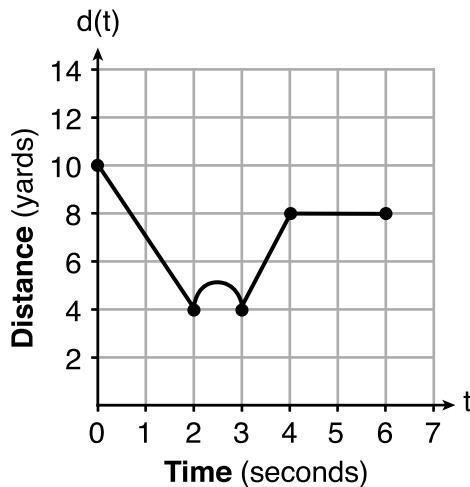
x	$r(x)$
-4	-12
-3	-15
-2	-16
-1	-15
0	-12
1	7

$$q(x) = x^2 + 2x - 8$$

The function with the *smallest* minimum value is

- (1) $q(x)$, and the value is -9 (3) $r(x)$, and the value is -16
(2) $q(x)$, and the value is -1 (4) $r(x)$, and the value is -2

18 A child is playing outside. The graph below shows the child's distance, $d(t)$, in yards from home over a period of time, t , in seconds.



Which interval represents the child constantly moving closer to home?

- (1) $0 \leq t \leq 2$ (3) $3 \leq t \leq 4$
(2) $2 \leq t \leq 3$ (4) $4 \leq t \leq 6$

19 If $a_1 = 6$ and $a_n = 3 + 2(a_{n-1})^2$, then a_2 equals

- (1) 75 (3) 180
(2) 147 (4) 900