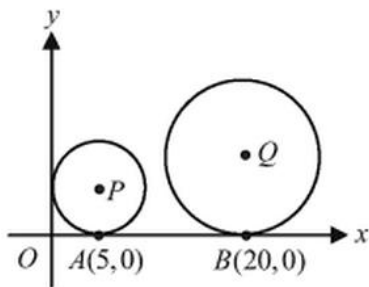


WS 7—Skills 26-30

Directions: For this section, solve each problem and decide which is the best of the choices given. Circle the corresponding capital letter. You may use any available space for scratchwork.

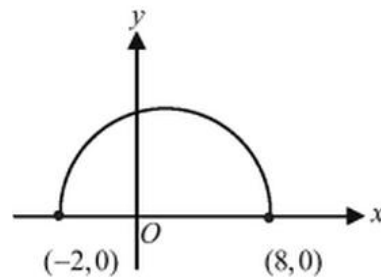
Notes:

1. The use of a calculator is permitted.
2. All numbers used are real numbers.
3. Figures that accompany problems in this test are intended to provide information useful in solving the problems. They are drawn as accurately as possible EXCEPT when it is stated in a specific problem that the figure is not drawn to scale. All figures lie in a plane unless otherwise indicated.
4. Unless otherwise specified, the domain of any function f is assumed to be the set of all real numbers x for which $f(x)$ is a real number.



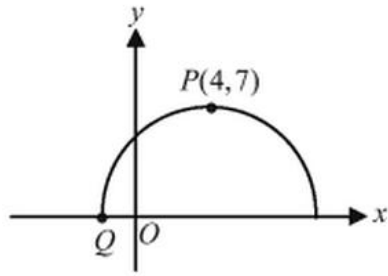
Note: Figure not drawn to scale.

1. In the xy -plane above, points P and Q are the centers of the circles, which are tangent to the x -axis. If the radius of the circle Q is twice the radius of circle P , what is the slope of line PQ (not shown)?
 - (A) $\frac{1}{4}$
 - (B) $\frac{1}{3}$
 - (C) $\frac{1}{2}$
 - (D) $\frac{2}{3}$
 - (E) $\frac{3}{4}$



Note: Figure not drawn to scale.

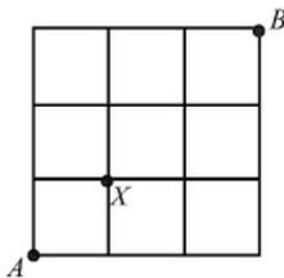
2. In the semicircle above, which of the following are x -coordinates of two points on this semicircle whose y -coordinates are equal?
 - (A) -1 and 6
 - (B) 0 and 7
 - (C) 1 and 6
 - (D) 1 and 5
 - (E) 2 and 3



Note: Figure not drawn to scale.

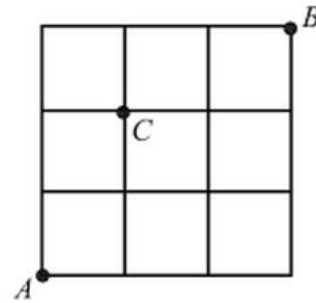
3. In the xy -plane above. The semicircle has a maximum height at point P . What are the coordinates of point Q ?

(A) $(-4, 0)$
 (B) $(-3, 0)$
 (C) $(-2, 0)$
 (D) $(-0.5, 0)$
 (E) $(-1, 0)$



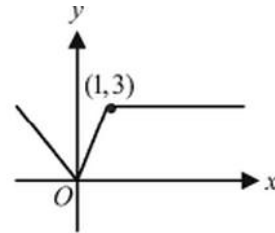
4. In the figure above, a path from point A to point B is determined by moving upward or to the right along the grid lines. How many different paths can be drawn from A to B that does **not** include point X ?

(A) 6
 (B) 8
 (C) 10
 (D) 16
 (E) 20

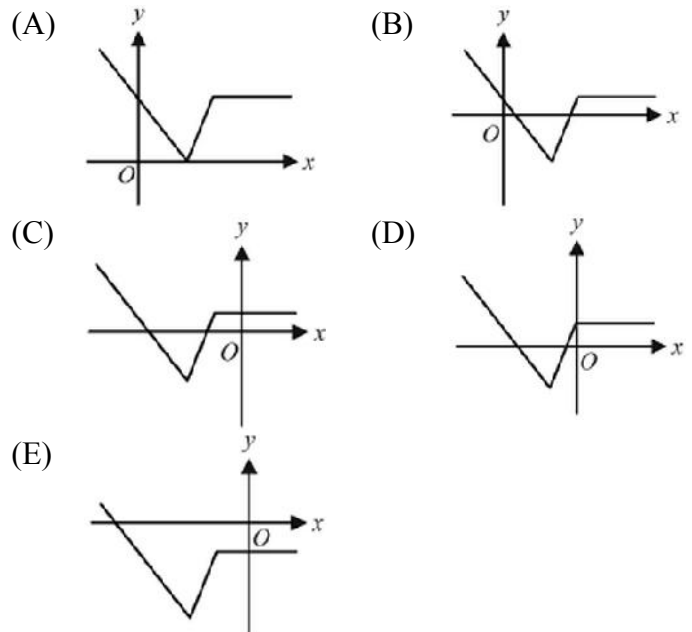


5. In the figure above, a path from point A to point B is determined by moving upward or to the right along the grid lines. How many different paths can be drawn from A to B that **must** include point C ?

(A) 4
 (B) 6
 (C) 9
 (D) 10
 (E) 12



6. The graph of $y = f(x)$ is shown above. Which of the following could be the graph of $y = f(x+2) - 2$?



7. If $a \geq 10$ and $a + 2b = 50$, what is the greatest possible value of b ?
- (A) 10
(B) 15
(C) 20
(D) 25
(E) 30
8. If $a + b = 30$ and $a > 12$, then which of the following must be true?
- (A) $b > 18$
(B) $b < 18$
(C) $b = 18$
(D) $b > 0$
(E) $b < 30$
9. For positive integers x and y , $2x + y = 32$ and $x < 8$. What is the least possible value of y ?
- (A) 16
(B) 17
(C) 18
(D) 20
(E) 32
10. For positive integers a and b , $a + b < 1800$ and $\frac{a}{b} = 1.25$. What is the greatest possible value of b ?
- (A) 800
(B) 798
(C) 796
(D) 792
(E) 784

For questions 11-12, refer to the following information.

A ball is thrown straight up from the ground with an initial velocity of 256 feet per second. The equation $h = 256t - 16t^2$ describes the height the ball can reach in t seconds.

11. If the ball reaches its maximum height in k seconds, what is the value of k ?
- (A) 4
(B) 8
(C) 12
(D) 16
(E) 24

12. What is the maximum height, in feet, that the ball will reach?
- (A) 360
(B) 370
(C) 384
(D) 1024
(E) 1200

Problem Number	Correct Answer	Skill Number
1	B	26
2	D	26
3	B	26
4	B	27
5	D	27
6	C	28
7	C	29
8	B	29
9	C	29
10	C	29
11	B	30
12	D	30