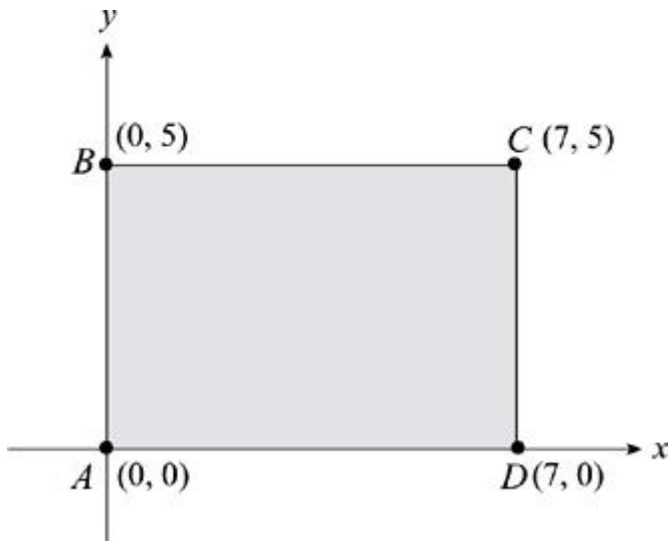


Math Level 2 SAT Practice Test 15



26.

Figure 4

What is the volume of the solid created by rotating rectangle $ABCD$ in Figure 4 around the y -axis?

- A. 219.91
- B. 245
- C. 549.78
- D. 769.69
- E. 816.24

27. If $f(x, y) = \frac{x^2 - 2xy + y^2}{x^2 - y^2}$, then $f(-x, -y) =$

A. 1

B. $\frac{1}{x+y}$

C. $\frac{-x+y}{x+y}$

D. $\frac{-x+y}{x-y}$

$$\frac{x - y}{x + y}$$

E.

28. In order to disprove the hypothesis, "No number divisible by 5 is less than 5," it would be necessary to

- A. prove the statement false for all numbers divisible by 5
- B. demonstrate that numbers greater than 5 are often divisible by 5
- C. indicate that infinitely many numbers greater than 5 are divisible by 5
- D. supply one case in which a number divisible by 5 is less than 5
- E. show that a statement true of numbers greater than 5 is also true of numbers less than 5

29. A parallelogram has vertices at (0, 0), (5, 0), and (2, 3). What are the coordinates of the fourth vertex?

- A. (3, -2)
- B. (5, 3)
- C. (7, 3)
- D. (10, 5)
- E. It cannot be determined from the information given.

30. The expression $\frac{x^2 + 3x - 4}{2x^2 + 10x + 8}$ is undefined for what values of x ?

- A. $x = \{-1, -4\}$
- B. $x = \{-1\}$
- C. $x = \{0\}$
- D. $x = \{1, -4\}$
- E. $x = \{0, 1, 4\}$

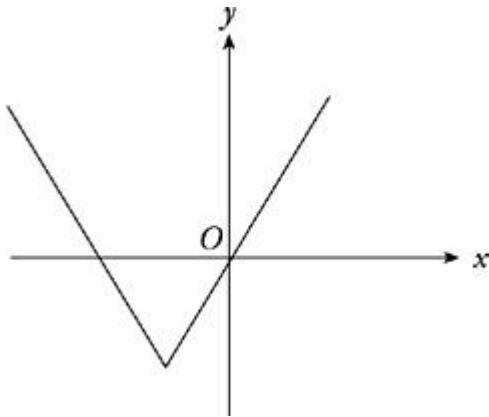
31. For which of the following functions is $f(x) > 0$ for all real values of x ?

- I. $f(x) = x^2 + 1$
- II. $f(x) = 1 - \sin x$
- III. $f(x) = \pi (\pi^{x-1})$

- A. I only
- B. II only
- C. I and III only

D. II and III only

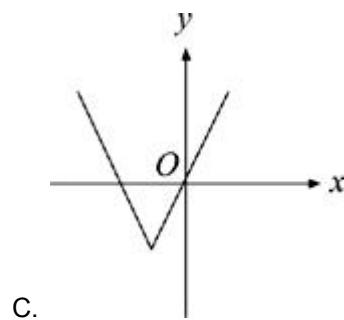
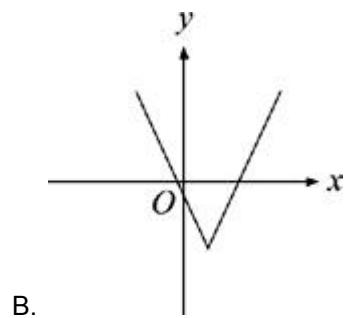
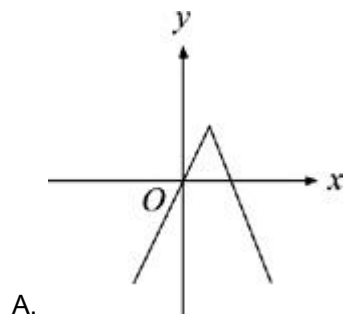
E. I, II, and III

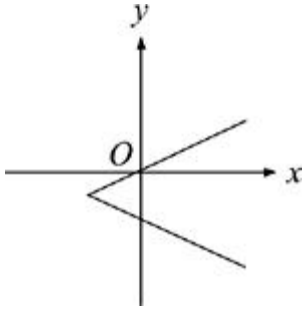


32.

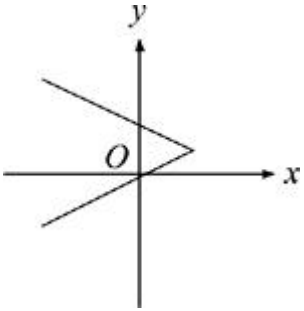
Figure 5

The graph of $y = f(x)$ is shown in Figure 5. Which of the following could be the graph of $y = -f(-x)$?





D.



E.

33. A wire is stretched from the top of a two-foot-tall anchor to the top of a 50-foot-tall antenna. If the wire is straight and has a slope of $\frac{2}{5}$, then what is the length of the wire in feet?

- A. 89.18
- B. 120
- C. 123.26
- D. 129.24
- E. 134.63

34. If $\frac{3\pi}{2} > \theta > 2\pi$ and $\sec \theta = 4$, then $\tan \theta =$

- A. -3.93
- B. -3.87
- C. 0.26
- D. 3.87
- E. 3.93

35. Circle O is centered at $(-3, 1)$ and has a radius of 4. Circle P is centered at $(4, -4)$ and has a radius of n . If circle O is externally tangent to circle P , then what is the value of n ?

- A. 4

- B. 4.37
- C. 4.6
- D. 5.28
- E. 6.25

36. In triangle ABC , $\frac{\sin A}{\sin B} = \frac{7}{10}$ and $\frac{\sin B}{\sin C} = \frac{5}{2}$. If angles A , B , and C are opposite sides a , b , and c , respectively, and the triangle has a perimeter of 16, then what is the length of a ?

- A. 2.7
- B. 4.7
- C. 5.3
- D. 8
- E. 14

37.

x	$h(x)$
-1	0
0	3
1	0
2	3

The table of values above shows selected coordinate pairs on the graph of $h(x)$. Which of the following could be $h(x)$?

- A. $x(x + 1)(x - 1)$
- B. $(x + 1)^2(x - 1)$
- C. $(x - 1)(x + 2)^2$
- D. $(x - 1)^2(x + 3)$
- E. $(x - 1)(x + 1)(2x - 3)$

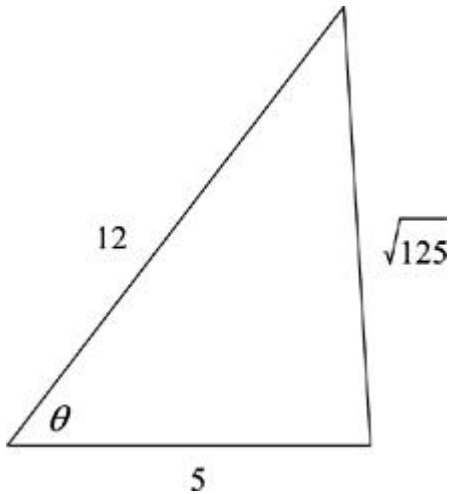
38. $a + b + 2c = 7$

$$a - 2b = 8$$

$$3b + 2c = n$$

For what values of n does the system of equations above have no real solutions?

- A. $n \neq -1$
- B. $n \leq 0$
- C. $n \geq 1$
- D. $n > 7$
- E. $n = -15$



39.

Figure 6

Note: Figure not drawn to scale.

In Figure 6, what is the value of θ in degrees?

- A. 62
- B. 65.38
- C. 65.91
- D. 68.49
- E. 68.7

40. If $\begin{vmatrix} l & m & n \\ p & q & r \\ s & t & u \end{vmatrix} = A$, then $\begin{vmatrix} 2l & 2m & 2n \\ 2p & 2q & 2r \\ 2s & 2t & 2u \end{vmatrix} =$

- A. $2A$
- B. $4A$

- C. 6A
- D. 8A
- E. 18A

41. In the function $g(x) = A[\sin(Bx + C)] + D$, constants are represented by A , B , C , and D . If $g(x)$ is to be altered in such a way that both its period and amplitude are increased, which of the following constants must be increased?

- A. A only
- B. B only
- C. C only
- D. A and B only
- E. C and D only

42. All of the elements of list M and list N are arranged in exactly 20 pairs, such that every element from list M is paired with a distinct element from list N . If in each such pair, the element from list M is larger than the element from list N , then which of the following statements must be true?

- A. The median of the elements in M is greater than the median of the elements in N .
- B. Any element of M is greater than any element of N .
- C. The mode of the elements in M is greater than the mode of the elements in N .
- D. The range of the elements in M is greater than the range of the elements in N .
- E. The standard deviation of the elements in M is greater than the standard deviation of the elements in N .

43. If 3, 5, 8.333, and 13.889 are the first four terms of a sequence, then which of the following could define that sequence?

- A. $a_0 = 3; a_{n+1} = a_n + 2$
- B. $a_0 = 3; a_{n+1} = 2a_n - 1$
- C. $a_0 = 3; a_n = a_{n+1} + \frac{40}{9}$
- D. $a_0 = 3; a_n = \frac{5}{3} a_{n-1}$
- E. $a_0 = 3; a_n = \frac{7}{3} a_{n-1} - \frac{40}{9} a_{n-1}$

44. If $0 \leq n \leq \frac{\pi}{2}$ and $\cos(\cos n) = 0.8$, then $\tan n =$

- A. 0.65
- B. 0.75
- C. 0.83
- D. 1.19
- E. 1.22

45. The height of a cylinder is equal to one-half of n , where n is equal to one-half of the cylinder's diameter. What is the surface area of this cylinder in terms of n ?

- A. $\frac{3\pi n^2}{2}$
- B. $2\pi n^2$
- C. $3\pi n^2$
- D. $2\pi n^2 + \frac{\pi n}{2}$
- E. $2\pi n^2 + \pi n$

46. If $(\tan \theta - 1)^2 = 4$, then which of the following could be the value of θ in radian measure?

- A. -0.785
- B. 1.373
- C. 1.504
- D. 1.512
- E. 3

47. Which of the following expresses the range of values of $y = g(x)$, if $g(x) = \frac{5}{x+4}$?

- A. $\{y: y \neq 0\}$
- B. $\{y: y \neq 1.25\}$
- C. $\{y: y \neq -4.00\}$
- D. $\{y: y > 0\}$
- E. $\{y: y \leq -1 \text{ or } y \geq 1\}$

48. If $\csc \theta = \frac{1}{3t}$, then where defined, $\cos \theta =$

A. $3t$

B. $\sqrt{1 - 3t^2}$

C. $\sqrt{1 - 9t^2}$

D. $\frac{3t}{\sqrt{1 - 3t^2}}$

E. $\frac{3t}{\sqrt{1 - 9t^2}}$

49. If $f(x, y) = \frac{xy + y}{x + y}$, then which of the following statements must be true?

I. If $x = 0$ and $y \neq 0$, then $f(x, y) = 1$.

II. If $x = 1$, then $f(x, x) = 1$.

III. $f(x, y) = f(y, x)$

A. I only

B. II only

C. I and II only

D. I and III only

E. I, II, and III

50. A triangle is formed by the x -axis, the y -axis, and the line $y = mx + b$. If $m = -b^3$, then what is the volume of the cone generated by rotating this triangle around the x -axis?

A. $\frac{\pi}{9}$

B. $\frac{\pi}{3}$

C. π

D. 3π

E. 9π

