

Math

22 QUESTIONS | 35 MINUTES

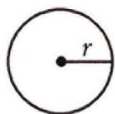
DIRECTIONS

The questions in this section address a number of important math skills. Use of a calculator is permitted for all questions.

NOTES

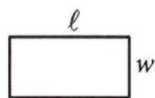
Unless otherwise indicated: • All variables and expressions represent real numbers. • Figures provided are drawn to scale. • All figures lie in a plane. • The domain of a given function is the set of all real numbers x for which $f(x)$ is a real number.

REFERENCE

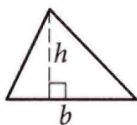


$$A = \pi r^2$$

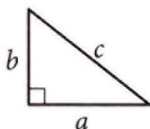
$$C = 2\pi r$$



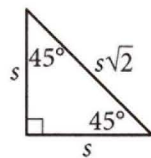
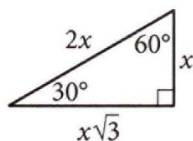
$$A = \ell w$$



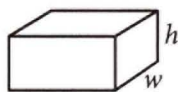
$$A = \frac{1}{2}bh$$



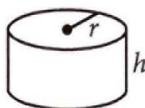
$$c^2 = a^2 + b^2$$



Special Right Triangles



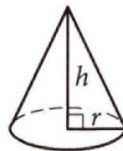
$$V = \ell wh$$



$$V = \pi r^2 h$$



$$V = \frac{4}{3}\pi r^3$$



$$V = \frac{1}{3}\pi r^2 h$$



$$V = \frac{1}{3}\ell wh$$

The number of degrees of arc in a circle is 360.

The number of radians of arc in a circle is 2π .

The sum of the measures in degrees of the angles of a triangle is 180.

For **multiple-choice questions**, solve each problem, choose the correct answer from the choices provided, and then circle your answer in this book. Circle only one answer for each question. If you change your mind, completely erase the circle. You will not get credit for questions with more than one answer circled, or for questions with no answers circled.

For **student-produced response questions**, solve each problem and write your answer next to or under the question in the test book as described below.

- Once you've written your answer, circle it clearly. You will not receive credit for anything written outside the circle, or for any questions with more than one circled answer.
- If you find more than one correct answer, write and circle only one answer.
- Your answer can be up to 5 characters for a positive answer and up to 6 characters (including the negative sign) for a negative answer, but no more.
- If your answer is a fraction that is too long (over 5 characters for positive, 6 characters for negative), write the decimal equivalent.
- If your answer is a decimal that is too long (over 5 characters for positive, 6 characters for negative), truncate it or round at the fourth digit.
- If your answer is a mixed number (such as $3\frac{1}{2}$), write it as an improper fraction ($\frac{7}{2}$) or its decimal equivalent (3.5).
- Don't include symbols such as a percent sign, comma, or dollar sign in your circled answer.

1

Which of the following is a solution for the equation below?

$$3x^2 - 19x + 6 = 0$$

- A) -6
- B) 2
- C) $\frac{1}{3}$
- D) $-\frac{1}{3}$

2

In the equation of a circle given below, what would be the value of its diameter?

$$x^2 - 8x + y^2 + 10y = 8$$

- A) 7
- B) 14
- C) 16
- D) 49

3

If $f(x) = -2x - 6$, what is the value of $|f(2)|$?

4

Which of the following is equivalent to $\tan(90 - x)^\circ$?

- A) $\frac{\sin x}{\cos x}$
- B) $\frac{\cos x}{\sin x}$
- C) $\frac{\cos(90 - x)^\circ}{\sin(90 - x)^\circ}$
- D) $-\tan x$

5

Alina started a savings account with \$113. She would earn a simple interest of 6.8% on her deposit monthly. The equation below represents the total amount of money $A(t)$ in her savings account in t months. What does 7.684 represent in this context?

$$A(t) = 113 + 7.684t$$

- A) The amount of interest earned after t months
- B) The total amount in the account after t months
- C) The amount of interest earned every month
- D) The interest earned every year.

6

The given equation is part of a system of equations. If the system has no solution, which of the following could be the equation of the second line in the system?

$$6x - 3y = 2$$

- A) $2x - 3y = 4$
- B) $-2x + y = 4$
- C) $-2x + y = \frac{-2}{3}$
- D) $3x - \frac{3}{2}y = 1$

7

If $p(x) = 2x^2 - 6x + 5$, what is the value of $p(2)$?

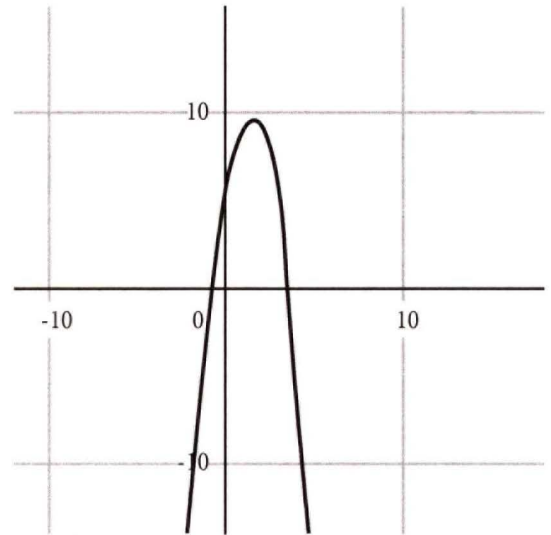
8

Which of the following is the equation of a line that passes through the origin and point (6, 5)?

- A) $5y = 6x$
- B) $6y = 5x$
- C) $y = 5x + 6$
- D) $y = 6x + 5$

9

Which of the following is the equation of the graph below?



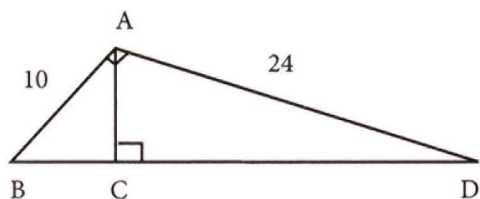
- A) $y = 2x^2 - 6x + 5$
- B) $y = 2x^2 + 6x + 5$
- C) $y = -2x^2 - 6x + 5$
- D) $y = -2x^2 + 6x + 5$

10

If a quadrilateral has the following interior angles x° , $(x + 40)^\circ$, $(x + 50)^\circ$, $(x - 10)^\circ$, what is the value of x ?

11

If triangle ABD is a right triangle, what is the value of $\sin CAD$?



- A) $\frac{12}{13}$
- B) $\frac{12}{5}$
- C) $\frac{5}{13}$
- D) $\frac{5}{12}$

12

Which of the following expressions is equivalent to $7wp(2w + 5)$?

- A) $14w^2p + 35$
- B) $14w^2p + 35wp$
- C) $14w^2 + 35p$
- D) $9w^2p + 35pw$

13

The volume of sphere A is 27 times that of sphere B. If sphere B has a radius of 4cm , what is the radius of sphere A?

14

A weather forecast report predicted that there is a 43% chance of rain on Monday. The report also indicated that it is twice as likely to rain on Thursday than on Monday. What is the probability that it won't rain on Thursday?

- A) 0.43
- B) 0.57
- C) 0.14
- D) 0.86

15

What is the least possible integer value of x for the inequality below?

$$\frac{16^x}{4^x} > 2^6$$

- A) 3
- B) 4
- C) 2
- D) 0

16

Given that $3(ax - b) + 4(bx - a) = x - 6$, what is the value of a ?

17

What is the volume of a cone with a radius of 12cm and a height 6 more than its radius?

- A) $2,160\pi$
- B) 864π
- C) $1,080\pi$
- D) 960π

18

What is the slope of the equation of the line below?

$$4x - 3y = 6$$

19

If the circumference of a circle is 20π , what is the value of the angle that is subtended by an arc length of 3π ?

20

Thirty students are required to pay a total of p dollars for a field trip. If 28 students paid before the day of the trip, how much was already paid in total?

- A) $28p$
- B) $\frac{14}{15}p$
- C) $30p$
- D) $\frac{p}{30}$

21

If the equation of a circle with a center $(-3, 5)$ and a radius of 6cm is written in the form $ax^2 + bx + cy^2 + dy + e = 0$, what is the value of e ?

- A) 9
- B) 36
- C) -2
- D) 25

22

Which of the choices below is a possible value of x for the given linear inequality?

$$-3(x + 2) < 2(x - 8)$$

- A) 1
- B) 2
- C) 0
- D) 3

STOP