

Quadratic Equations

Foundation to Challenge

Practice should make the test feel easier, not merely familiar.

Work without the answer key first. Check answers through the SAT Practice Library after completing the set.

FOUNDATION

1 What are the solutions of $x^2 + 6x + 5 = 0$?

- A. $x = -1$ and $x = -5$
- B. $x = 1$ and $x = 5$
- C. $x = -3 \pm \sqrt{5}$
- D. $x = 3 \pm \sqrt{5}$

STANDARD

2 If $a < 1$ and $3a^2 - 10a + 3 = 0$, what is a ?

ADVANCED

3 If p and q are the two solutions of $2x^2 + 7x = 4$ and $p > q$, what is q^2 ?

- A. $\frac{1}{4}$
- B. 1
- C. 4
- D. 16

FOUNDATION

- 4 How many distinct real solutions does $x^2 - 8x + 20 = 0$ have?
- A. 0
 - B. 1
 - C. 2
 - D. Infinitely many

ADVANCED

- 5 The graphs $y = x^2 - 4x + 3$ and $y = 2x - 5$ intersect at two points. At the intersection with the smaller x-coordinate, what is the y-coordinate?

STANDARD

- 6 How many times does $y = -x^2 + 8x - 2$ intersect $y = 13$?
- A. 0
 - B. 1
 - C. 2
 - D. Infinitely many

- 7 For which value of k does $y = k$ and $y = x^2 - 4x + 5$ have no real intersection?
- A. 0
 - B. 1
 - C. 2
 - D. 4

ADVANCED

- 8 For which value of c does $y = -4$ and $y = x^2 + cx$ have exactly two real intersections?
- A. 1
 - B. 2
 - C. 3
 - D. 5

CHALLENGE

- 9 For which value of a does $y = -2$ and $y = ax^2 + 6x - 5$ touch at exactly one point?
- A. -3
 - B. -2
 - C. 2
 - D. 3

STANDARD

- 10 What is the sum of the solutions of $(3x - 2)^2 = 6x + 7$?

FOUNDATION

- 11 One zero of $y = x^2 - 12x + k$ is 5. What is the other zero?

ADVANCED

- 12 The positive integer zeros of $y = x^2 + bx + 18$ are such that one zero is twice the other. What is b ?

STANDARD

- 13 If $b < 0$ and $y = 3x^2 + bx + 12$ touches the x-axis at exactly one point, what is b ?
- A. -6
 - B. -12
 - C. -18
 - D. -24

FOUNDATION

- 14 The quadratic $y = x^2 + ax + b$ has zeros 3 and -8 . What is a ?

FINISHED?

Check your answers online

aryalanupme.github.io/sat-quadratic-equations.html

Do not stop at “wrong.” Identify why it was wrong: concept, algebra, arithmetic, interpretation, calculator choice, or timing.

I do not correct the answer first. I correct the reason.

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