

Functions: Evaluation, Composition & Structure

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 If $g(x) = 7x^4 + 11$, what is $g(-2)$?
- A. 67
 - B. 95
 - C. 123
 - D. 139

STANDARD

- 2 If $f(x) = (x+2)^x$, what is $f(0) + f(1) + f(2)$?

FOUNDATION

- 3 If $f(x) = 4x - 3$ and $g(x) = f(3x) + 2$, what is $g(5)$?

- 4 The function $k(x) = nx^2 + 5$ satisfies $k(-4) = 37$. What is $k(4)$?

- 5 If $f(x) = 3x - 2$ and $g(x) = x^2$, what is $g(f(x))$?

- A. $9x^2 - 12x + 4$
 B. $3x^2 - 2$
 C. $9x^2 + 4$
 D. $6x^2 - 4$

STANDARD

- 6 If $f(x) = x + 2$ and $g(x) = \frac{x}{3}$, and $f(g(f(k))) = 8$, what is k ?

- 7 Which expression $K(x, y)$ satisfies $K(3, 4) = 10$?

- A. $(x - 1)^2 + (y - 1)^2 - 3$
 B. $-(x - 3)^2 + (y - 4)^2 + 8$
 C. $(x - 3)^2 + (y - 5)^2 + 5$
 D. $(x - 5)^2 + (y - 2)^2 - 2$

FOUNDATION

- 8 For what x -value is $f(x) = \frac{5}{x^2 - 14x + 49}$ undefined?

STANDARD

- 9 A function has values $f(-2)=18$, $f(0)=14$, and $f(2)=18$. Which could define f ?
- A. $f(x)=2x+14$
 - B. $f(x)=x^3+14$
 - C. $f(x)=x^2+14$
 - D. $f(x)=14-x$

ADVANCED

- 10 A quadratic g has $g(-1)=7$, $g(0)=8$, and $g(2)=16$. Which equation defines g ?
- A. $g=2x^2+x+8$
 - B. $g=x^2+2x+8$
 - C. $g=3x^2+8$
 - D. $g=2x^2-3x+8$

FOUNDATION

- 11 For which function is $f(4)=f(-4)$?
- A. $f(x)=2x^2-1$
 - B. $f(x)=x^3+1$
 - C. $f(x)=3x+2$
 - D. $f(x)=\frac{1}{x}+2$

STANDARD

- 12 If $f(x)=ax^2+b$, $f(0)=5$ and $f(2)=17$, what is $f(3)$?

ADVANCED

13 A polynomial has x-intercepts -2 and 3 and y-intercept 36 . Which could define it?

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

FOUNDATION

14 If $f(x) = x^2 + 2$ and $g(x) = x^2 - 2$, what is $f(g(3))$?

STANDARD

15 If $f(x) = 5^{x-x^5}$, what is $f(1) + f(5)$?

FOUNDATION

16 If $f(x) = x + 7$, for what x does $f(5x) = f(x+6)$?

STANDARD

17 For $y = 16 - x^2$, the graph intersects the axes at A and B on the positive axes. What is AB ?

- A. $4\sqrt{2}$
- B. $4\sqrt{17}$
- C. 16
- D. $8\sqrt{5}$

FOUNDATION

- 18 For $h(x) = \sqrt{25 - x^2}$, $-3 \leq x \leq 3$, what is the maximum value of $h(x)$?

ADVANCED

- 19 The graph $y = x^2 + 2x - 4$ contains $(m, 2m)$, where $m > 0$. What is m ?

- 20 The line $y = ax + 12$ passes through $(-a, a)$, where $a > 0$. What is a ?

FINISHED?

Check your answers online

aryalanupme.github.io/sat-functions-evaluation-composition.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.

Independent SAT-style practice. Not affiliated with or endorsed by College Board.