

Function Graphs & Interpretation

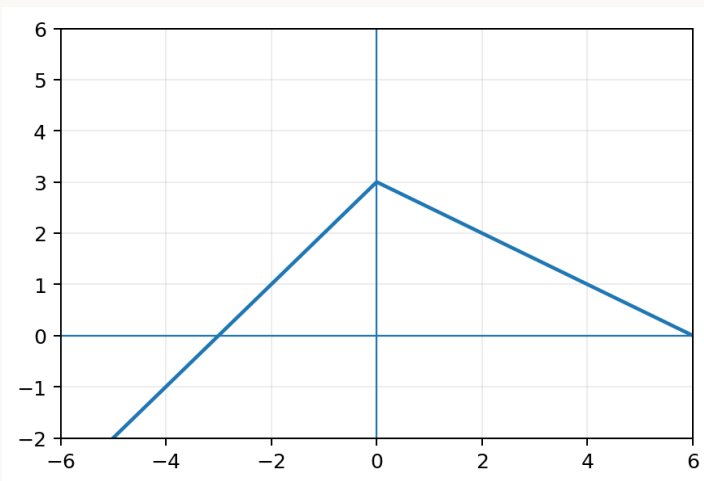
Foundation to Challenge

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.

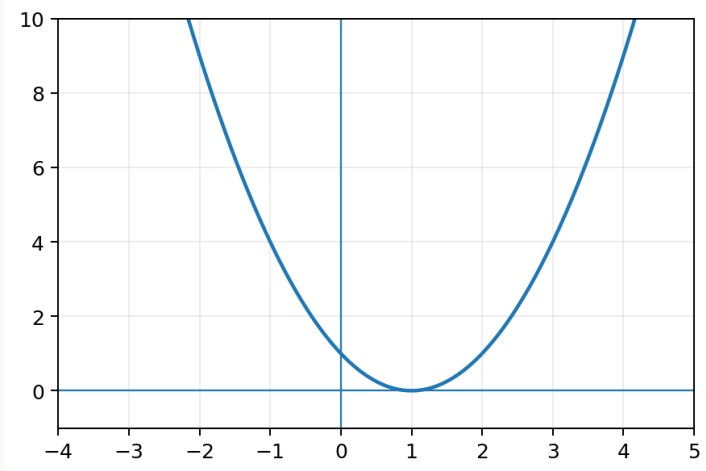
FOUNDATION

- 1 The graph of $y = f(x)$ is shown. Find: i. $f(-4)$ ii. $f(-1)$ iii. $f(2)$ iv. $f(6)$.



Horizontal axis: x. Vertical axis: y.

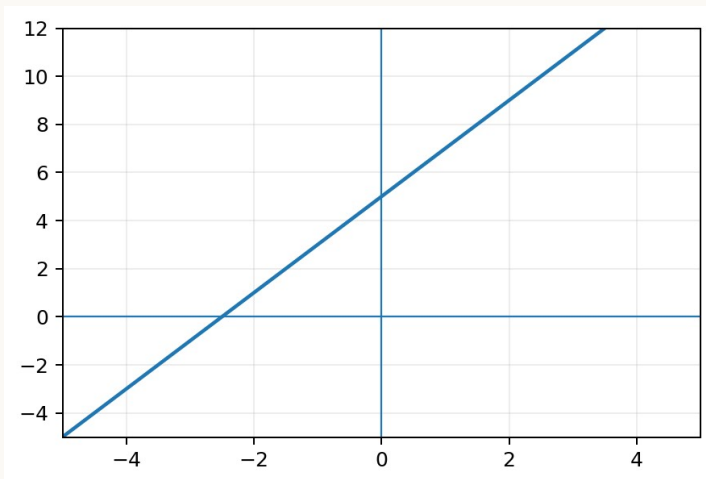
- 2 The graph of $y = g(x)$ is shown. Which x -value satisfies $g(x) = 9$?



- A. -2
- B. 0
- C. 1
- D. 2

Horizontal axis: x . Vertical axis: y .

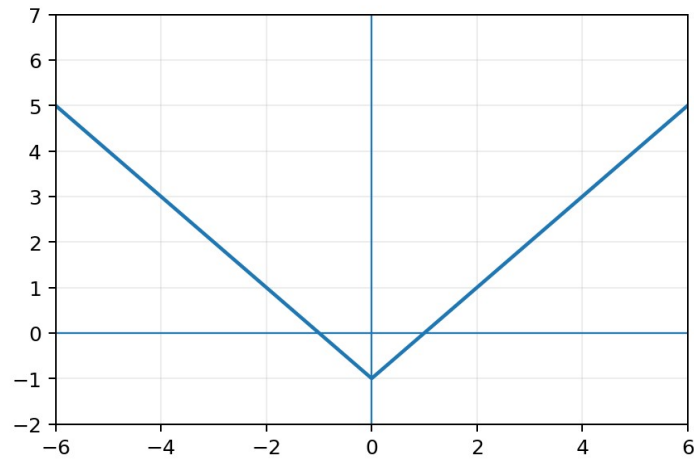
- 3 The graph of $y = h(x)$ is shown. For which x -value is $h(x) = 1$?



- A. -3
- B. -2
- C. -1
- D. 2

Horizontal axis: x . Vertical axis: y .

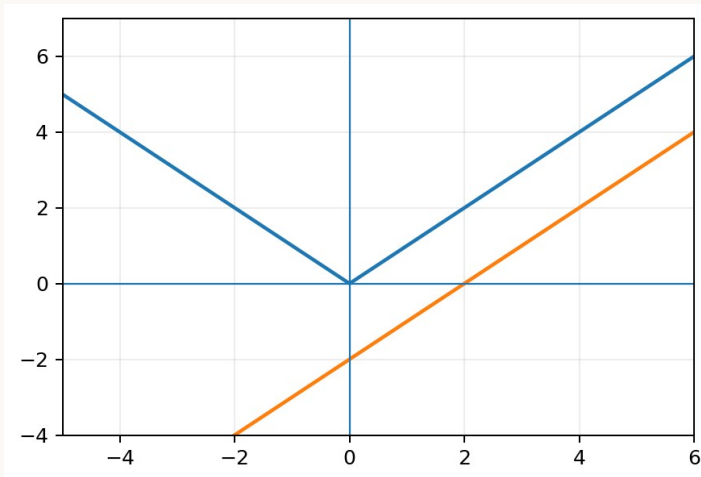
- 4 The graph of $y = g(x)$ is shown. What are the two x -values for which $g(x) = 4$?



Horizontal axis: x . Vertical axis: y .

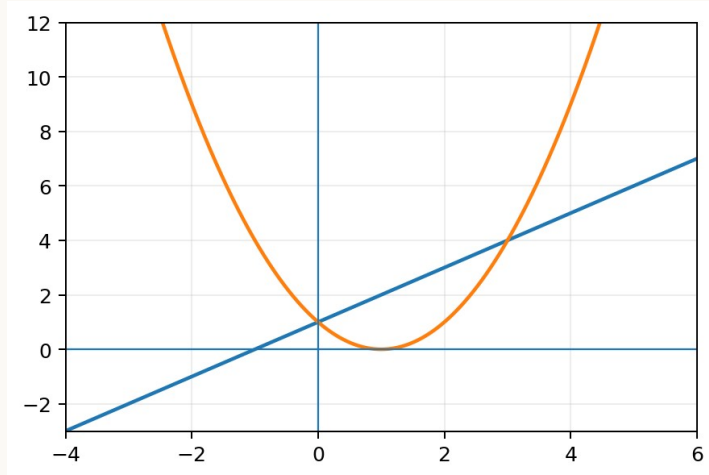
STANDARD

- 5 The graph shows $f(x) = |x|$ and $g(x) = x - 2$. Find i. $f(g(-3))$ ii. $g(f(-4))$ iii. $f(g(5))$.



Horizontal axis: x . Vertical axis: y . Blue: f . Orange: g .

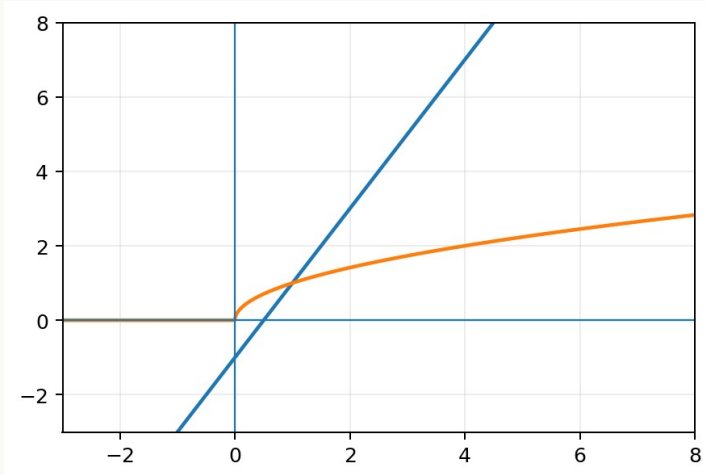
- 6 The graph shows $f(x) = x + 1$ and $g(x) = (x - 1)^2$. What is $f(g(3))$?



Horizontal axis: x. Vertical axis: y. Blue: f. Orange: g.

- 7 Using $f(x) = x + 1$ and $g(x) = (x - 1)^2$, $g(f(k)) = 0$ for one real k . What is k ?

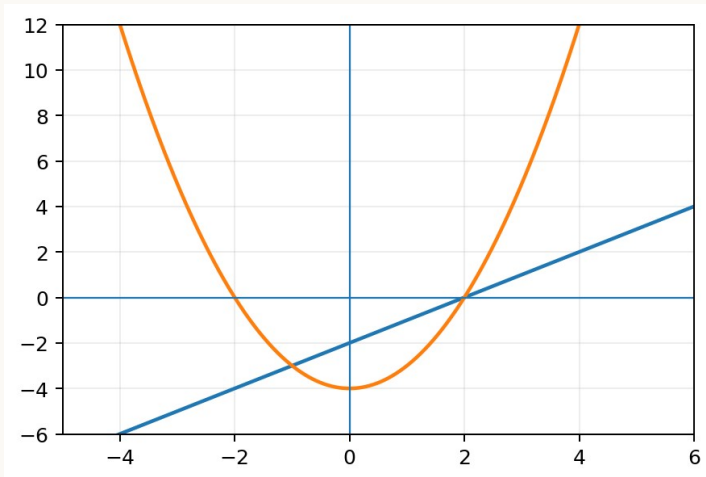
- 8 The graph shows $f(x) = \sqrt{x}$ and $g(x) = 2x - 1$. What is $f(g(5))$?



Horizontal axis: x. Vertical axis: y. Blue: g. Orange: f.

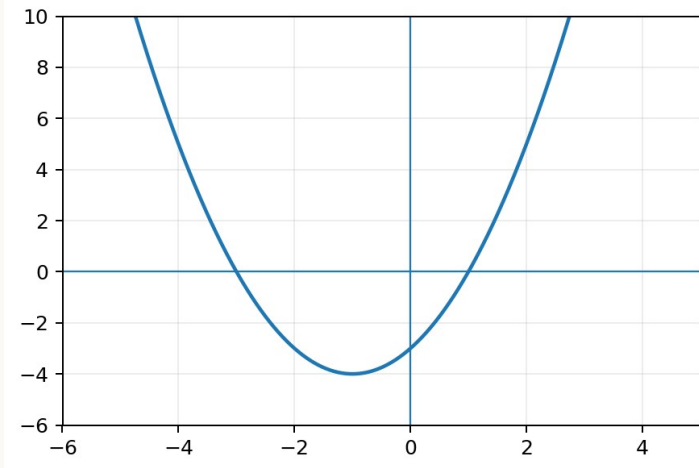
ADVANCED

- 9 The graph shows $f(x) = x - 2$ and $g(x) = x^2 - 4$. If $f(g(k)) = 3$, what is $|k|$?



Horizontal axis: x. Vertical axis: y. Blue: f. Orange: g.

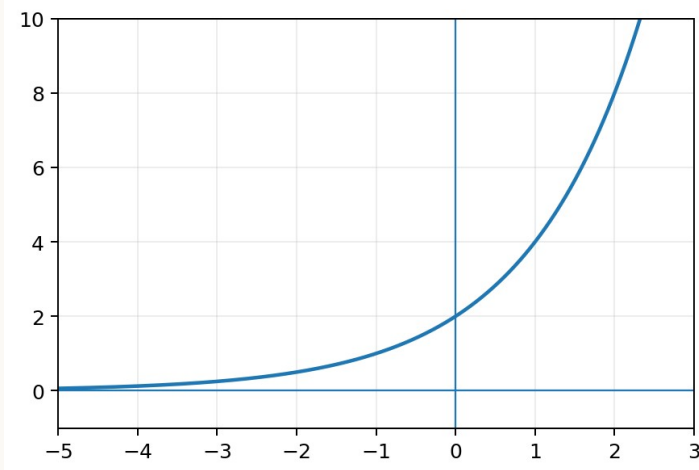
- 10 For the graphed function f , if $f(a) = f(2)$, which could be a ?



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

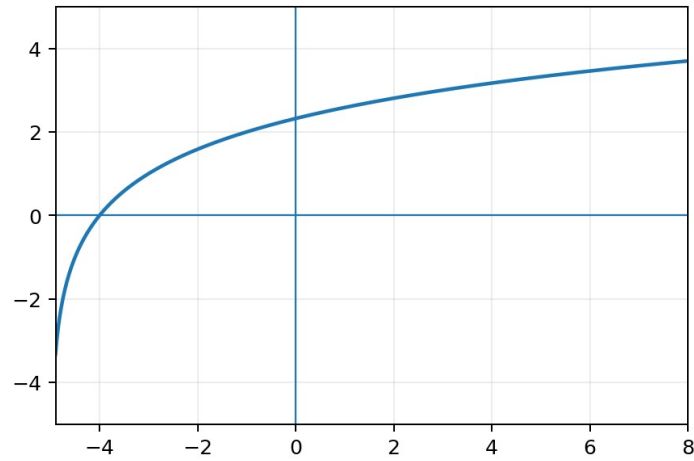
Horizontal axis: x. Vertical axis: y.

- 11 The graph shown is $y = f(x+1)$. For which x-value must $f(x) = 4$?



Horizontal axis: x. Vertical axis: y.

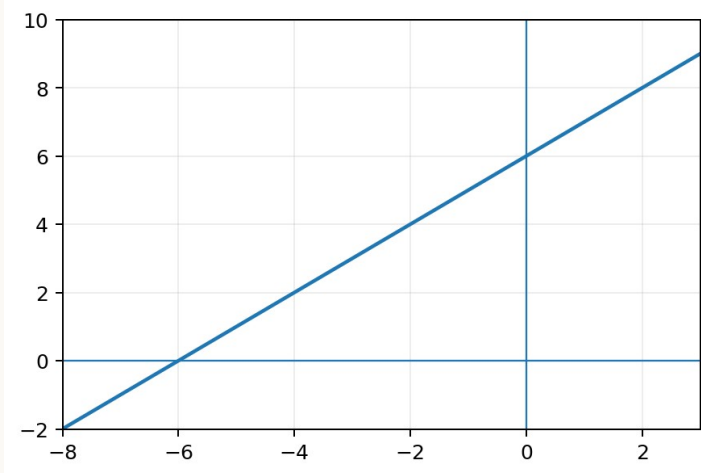
- 12 The graph shown is $y=f(x+4)$. To the nearest integer, for what x must $f(x)=0$?



Horizontal axis: x . Vertical axis: y .

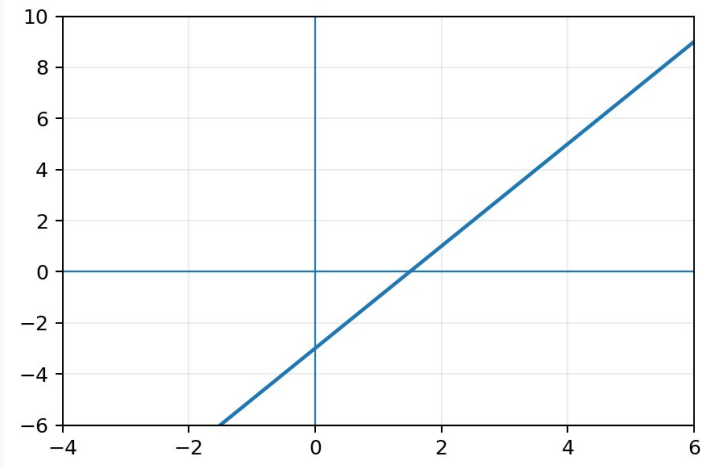
FOUNDATION

- 13 The graph shown is $y=f(x+2)$. For which x must $f(x)=5$?



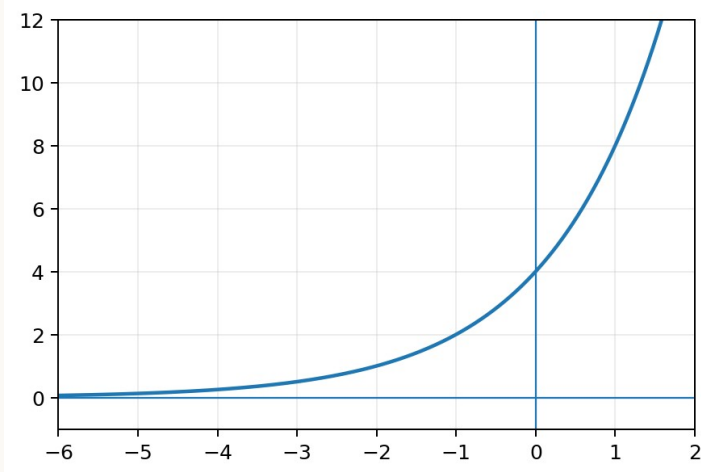
Horizontal axis: x . Vertical axis: y .

- 14 The graph shown is $y = g(x - 1)$. For which x must $g(x) = 1$?



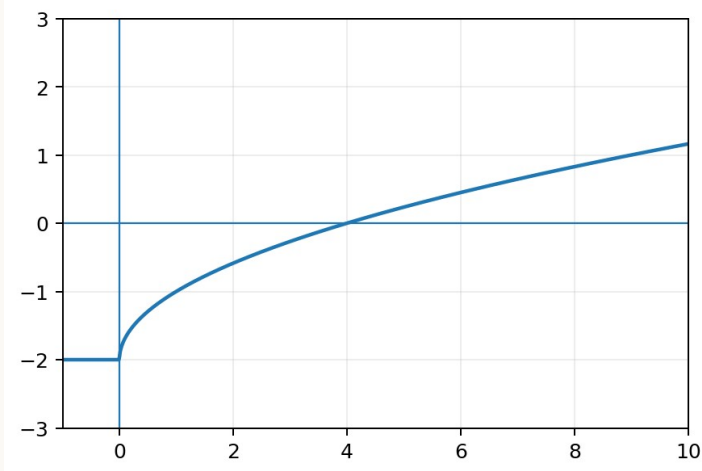
Horizontal axis: x. Vertical axis: y.

- 15 The graph shown represents $f(x + 2)$. What is $f(2)$?



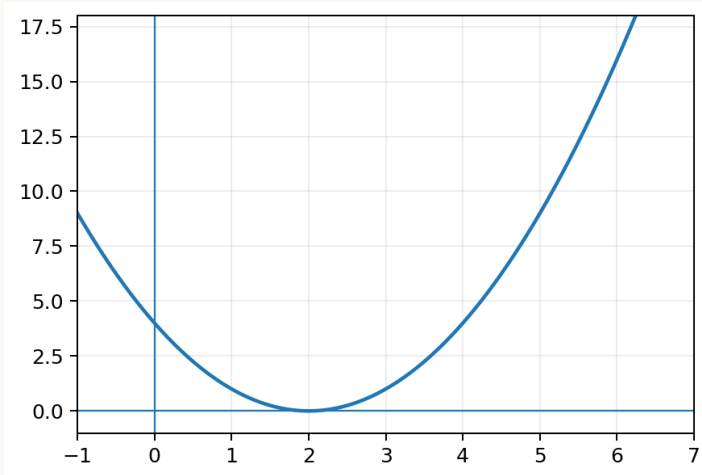
Horizontal axis: x. Vertical axis: y.

- 16 The graph shown represents $f(x) - 2$. What is $f(4)$?



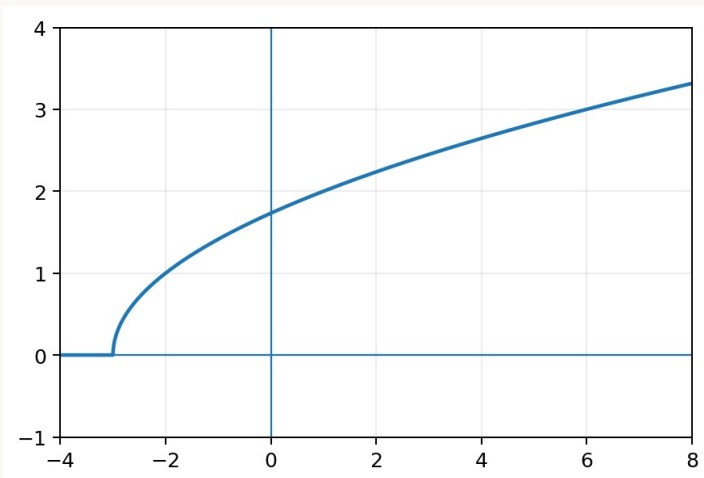
Horizontal axis: x. Vertical axis: y.

- 17 The graph shown represents $f(x - 2)$. What is $f(4)$?



Horizontal axis: x. Vertical axis: y.

- 18 The graph shown is $y = h(x+2)$. For which x must $h(x) = 0$?



Horizontal axis: x . Vertical axis: y .

ADVANCED

- 19 A function satisfies $f(0) = 3$, $f(2) = 1$, and $f(4) = 5$. What is the y -intercept of $y = f(x+2)$?
- A. $(0, 1)$
 - B. $(0, 3)$
 - C. $(0, 5)$
 - D. $(0, -2)$

STANDARD

- 20 A rational function has vertical asymptote $x = 2$ and horizontal asymptote $y = -1$. Which could define it?
- A. $f(x) = \frac{1}{x-2} - 1$
 - B. $f(x) = \frac{1}{x+2} - 1$
 - C. $f(x) = \frac{1}{x-2} + 1$
 - D. $f(x) = \frac{1}{x+1} - 2$

ADVANCED

21 A cubic polynomial has x-intercepts -4 , 0 , and 3 and falls to the right. Which could define it?

A. $y = \left(\frac{1}{5}\right)x(x+4)(x-3)$

B. $y = -\left(\frac{1}{5}\right)x(x+4)(x-3)$

C. $y = -\left(\frac{1}{5}\right)x(x-4)(x+3)$

D. $y = -\left(\frac{1}{5}\right)x(x+4)^2(x-3)$

FOUNDATION

22 The graph of $y = f(x) + 2$ is the graph of $y = 3^x$ shifted up 2 units. Which equation defines f ?

A. $f(x) = 3^x$

B. $f(x) = 3^{x+2}$

C. $f(x) = 3^{x-2}$

D. $f(x) = 2 \cdot 3^x$

STANDARD

23 The graph of $y = g(x) - 6$ is a line with slope $\frac{2}{3}$ and y-intercept -4 . Which equation defines g ?

A. $g = \left(\frac{2}{3}\right)x - 10$

B. $g = \left(\frac{2}{3}\right)x - 4$

C. $g = \left(\frac{2}{3}\right)x + 2$

D. $g = \left(\frac{3}{2}\right)x + 2$

24

The graph $y = f(x) - 4$ is the line $y = \left(\frac{1}{2}\right)x - 3$. Which equation defines f ?

A. $f = \left(\frac{1}{2}\right)x - 7$

B. $f = \left(\frac{1}{2}\right)x - 4$

C. $f = \left(\frac{1}{2}\right)x + 1$

D. $f = 2x + 1$

ADVANCED

25

The graph $y = f(x) - 2$ crosses the x-axis at $x = 6$. If f is linear with slope $\frac{1}{2}$, what is the x-intercept of f ?

CHALLENGE

26

The graph of $y = f(x - 3)$ is $y = \left(\frac{3}{4}\right)x - 6$. Which equation defines f ?

A. $f = \left(\frac{3}{4}\right)x - 6$

B. $f = \left(\frac{3}{4}\right)x - \frac{15}{4}$

C. $f = \left(\frac{3}{4}\right)x - \frac{33}{4}$

D. $f = \left(\frac{4}{3}\right)x - 6$

FINISHED?

Check your answers online

aryalanupme.github.io/sat-function-graphs.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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