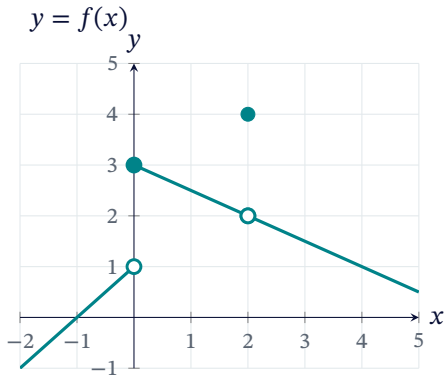
1.2 / Practice workbook

Limit Notation

Practice

Problems 1–3 / Show your reasoning

1 The graph of f is shown. For which values of a does $\lim_{x \to a} f(x)$ exist but not equal $f(a)$?



A. 0 only
B. 2 only
C. 0 and 2
D. 2 and 4

2 The statement $\lim_{x \to -4} h(x) = \frac{1}{2}$ is true. Which of the following is a correct interpretation of this statement?

A. $h(-4) = \frac{1}{2}$
B. As x gets close to $\frac{1}{2}$, $h(x)$ gets close to -4.
C. As x gets close to -4 ($x \neq -4$), $h(x)$ gets close to $\frac{1}{2}$.
D. $h(x) = \frac{1}{2}$ for every x near -4.

1.2 / AP-style free response

Problem 3 ➤ */ Show the work and the reasons a grader looks for.*

As x approaches -1 ($x \neq -1$), $f(x)$ approaches 4. Also, $f(-1) = 7$.

(a) Write the first sentence with limit notation.

(b) What is the value of f at $x = -1$?

(c) A student writes $\lim_{x \to -1} f(x) = 7$. Explain the student's error.

1.2 / Answer key

Limit Notation

1 (B)

2 (C)

3 (a) $\lim_{x \to -1} f(x) = 4$; (b) $f(-1) = 7$; (c) The value and the limit: 7 is $f(-1)$, the value at -1. The limit looks near -1, not at -1, and is 4.