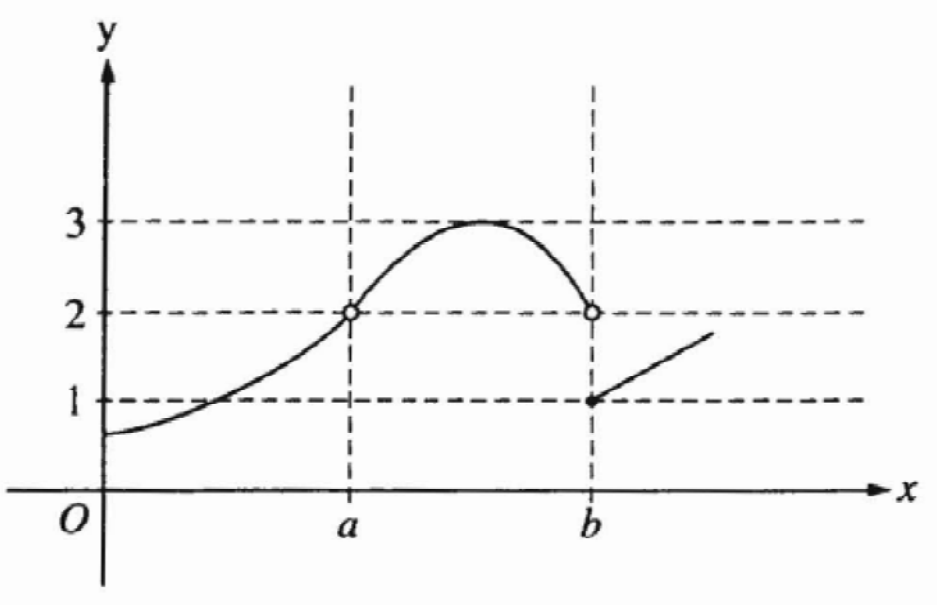
Name: _____ **Class:** _____ **Date:** _____ **ID: A**

Limits and Continuity

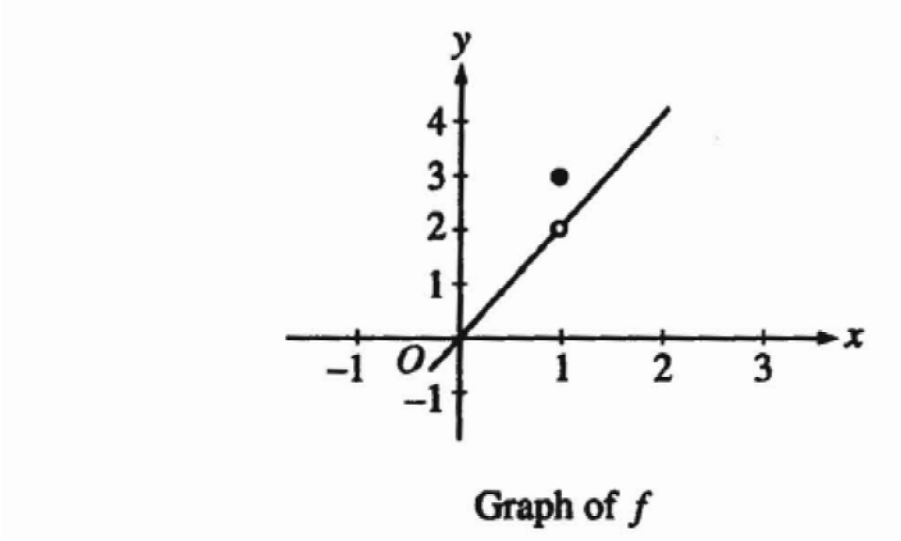
Multiple Choice
Identify the choice that best completes the statement or answers the question.

1.



The graph of the function f is shown in the figure above. Which of the following statements about f is true?

a. $\lim_{x \to a} f(x) = \lim_{x \to b} f(x)$
b. $\lim_{x \to a} f(x) = 2$
c. $\lim_{x \to b} f(x) = 2$
d. $\lim_{x \to b} f(x) = 1$
e. $\lim_{x \to a} f(x)$ does not exist

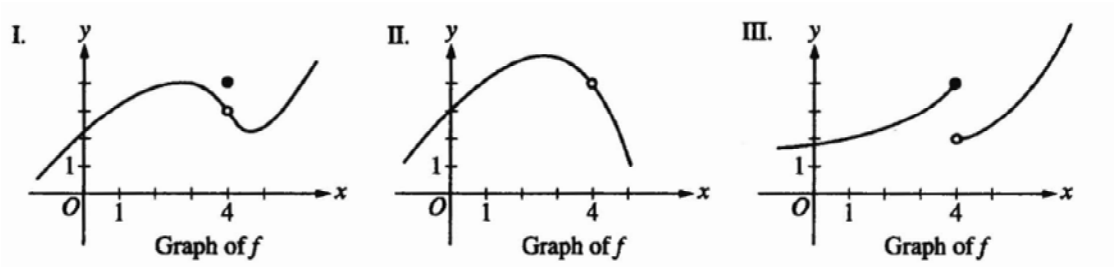
2. 

Graph of f

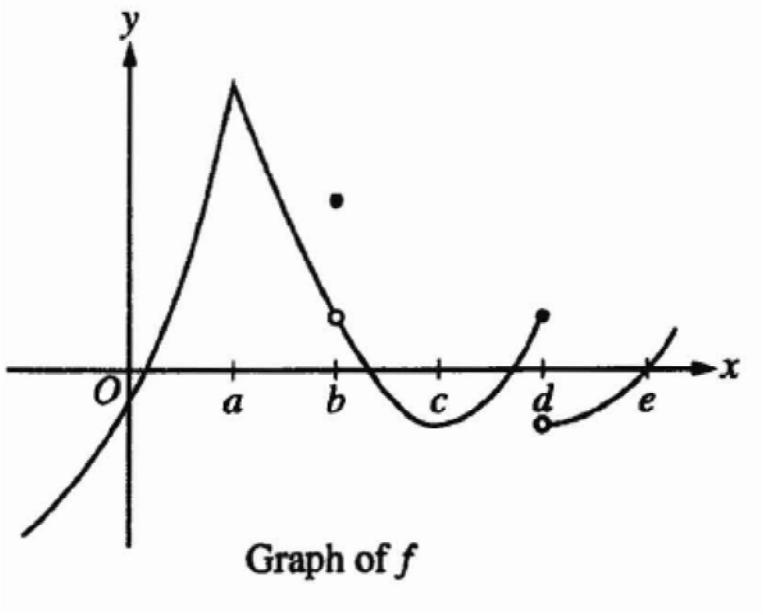
The graph of the function f is shown in the figure above. The value of $\lim_{x \to 1} \sin\big(f(x) \big)$ is

a. 0.909
b. 0.841
c. 0.141
d. -0.416
e. nonexistent

3. For which of the following does $\lim_{x \to 4} f(x)$ exist?



a. I only
b. II only
c. III only
d. I and II only
e. I and III only

4. 

Graph of *f*

The graph of a function *f* is shown above. At which value of *x* is *f* continuous, but not differentiable?

a. *a*
b. *b*
c. *c*
d. *d*
e. *e*

5. $\lim_{x \to \infty} \frac{x^3 - 2x^2 + 3x - 4}{4x^3 - 3x^2 + 2x - 1} =$

a. 4
b. 1
c. $\frac{1}{4}$
d. 0
e. -1

6. If $a \neq 0$, then $\lim_{x \to a} \frac{x^2 - a^2}{x^4 - a^4}$ is

a. $\frac{1}{a^2}$
b. $\frac{1}{2a^2}$
c. $\frac{1}{6a^2}$
d. 0
e. nonexistent