TEST

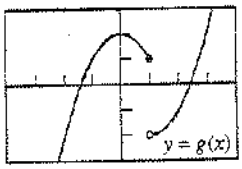
DATE

A Chapter 2

NAME

Directions: Show all steps leading to your answers, including any intermediate results obtained using a graphing utility. Use the back of the test or another sheet of paper if necessary.

1. Use the graph to estimate the limits and value of the function, or explain why the limits do not exist.



[−4, 4] by [−3, 3]

(a) $\lim_{x \to 1^-} g(x)$

(b) $\lim_{x \to 1^+} g(x)$

(c) $\lim_{x \to 1} g(x)$

(d) $g(1)$

1. (a) _____
   (b) _____
   (c) _____
   (d) _____

2. Determine the limit by substitution.
$\lim_{x \to -3} (7 - 2x - x^2)$

2. _____

3. Assume that $\lim_{x \to b} f(x) = -4$ and $\lim_{x \to b} g(x) = 8$. Find the value of $\lim_{x \to b} (f(x) - g(x))$.

(A) −12 (B) −2 (C) −1/2 (D) 1/2 (E) 4

3. _____

4. Find the limit graphically. Show how the Sandwich Theorem can be used to confirm your answer.

$\lim_{x \to 0} \left(3 + x^2 \sin\frac{1}{x}\right)$

4. _____

5. For $f(x) = \dfrac{|4 - 3x|}{6x + 1}$, use graphs and tables to find

(a) $\lim_{x \to \infty} f(x)$ and (b) $\lim_{x \to -\infty} f(x)$.

(c) Identify any horizontal asymptotes.

5. (a) _____
   (b) _____
   (c) _____

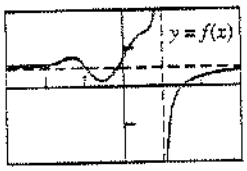
6. Consider the function $f(x)$ given below. Which of the following appear to be true about $f(x)$?

I. The line $y = \dfrac{1}{2}$ is a horizontal asymptote.

II. $\lim_{x \to 2} f(x) = 2$

III. The line $x = 1$ is a vertical asymptote.

IV. $\lim_{x \to +\infty} f(x) = \lim_{x \to -\infty} f(x)$



[−3, 3] by [−2, 2]

(A) I and III
(B) III and IV
(C) I, II, and III
(D) I, III, and IV
(E) I, II, III, and IV

6. _____

TEST

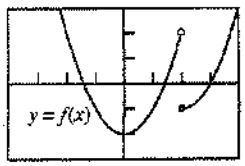
DATE

B Chapter 2

NAME

Directions: Show all steps leading to your answers, including any intermediate results obtained using a graphing utility. Use the back of the test or another sheet of paper if necessary.

1. Use the graph to estimate the limits and value of the function, or explain why the limits do not exist.



[−4, 4] by [−3, 3]

(a) $\lim_{x \to 2^-} f(x)$

(b) $\lim_{x \to 2^+} f(x)$

(c) $\lim_{x \to 2} f(x)$

(d) $f(2)$

1. **(a)** _____

(b) _____

(c) _____

(d) _____

2. Determine the limit by substitution.

$\lim_{x \to -2} (-6x^2 + 5x + 12)$

2. _____

3. Assume that $\lim_{x \to b} f(x) = -3$ and $\lim_{x \to b} g(x) = -2$. Find the value of $\lim_{x \to b} (f(x) - g(x))$.

(A) -5 (B) -1 (C) 1 (D) 5 (E) 6

3. _____

4. Find the limit graphically. Show how the Sandwich Theorem can be used to confirm your answer.

$\lim_{x \to 0} \left(5 - x^2 \cos \frac{1}{x}\right)$

4. _____

_____

_____

5. For $f(x) = \dfrac{|4x + 3|}{-2x + 6}$, use graphs and tables to find

(a) $\lim_{x \to \infty} f(x)$ and **(b)** $\lim_{x \to -\infty} f(x)$.

(c) Identify any horizontal asymptotes.

5. **(a)** _____

(b) _____

(c) _____

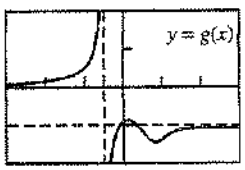
6. Consider the function $g(x)$ given below. Which of the following appear to be true about $g(x)$?

I. The line $x = \dfrac{1}{2}$ is a vertical asymptote.

II. $\lim_{x \to -1} g(x) = \dfrac{1}{2}$

III. The line $y = -1$ is a horizontal asymptote.

IV. $\lim_{x \to +\infty} g(x) = \lim_{x \to -\infty} g(x)$



[−3, 3] by [−2, 2]

(A) I and II
(B) I and III
(C) II and III
(D) II and IV
(E) II, III and IV

6. _____