CHAPTER 2
Limits and Continuity

SECTION 2.1

2.1.1 For the function f graphed to the right, find

(a) $\lim_{x \to 0^-} f(x)$

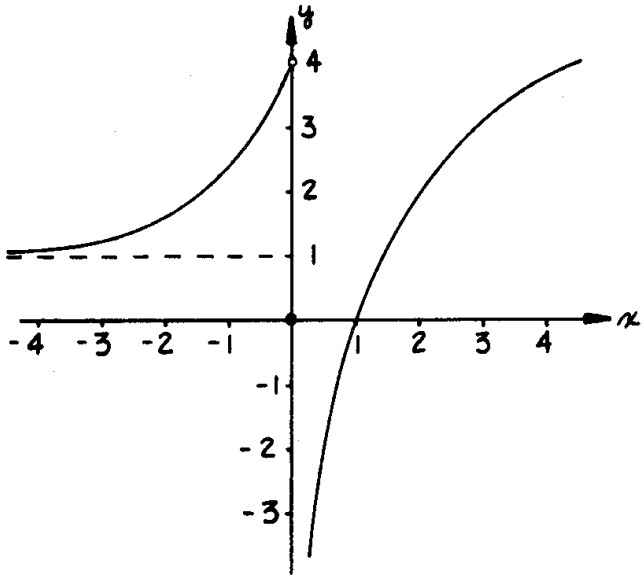
(b) $\lim_{x \to 0^+} f(x)$

(c) $\lim_{x \to 0} f(x)$

(d) $f(0)$

(e) $\lim_{x \to -\infty} f(x)$

(f) $\lim_{x \to +\infty} f(x)$



2.1.2 For the function f graphed to the right, find

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

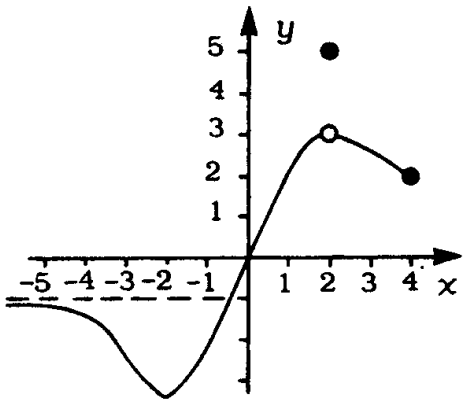
(b) $\lim_{x \to 2^+} f(x)$

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

(d) $f(2)$

(e) $\lim_{x \to -\infty} f(x)$

(f) $\lim_{x \to +\infty} f(x)$



2.1.3 For the function f graphed to the right, find

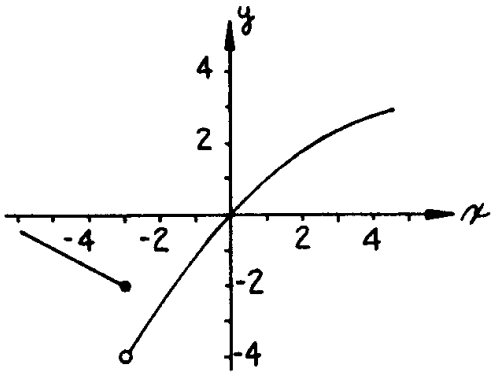
(a) $\lim_{x \to -3^-} f(x)$

(b) $\lim_{x \to -3^+} f(x)$

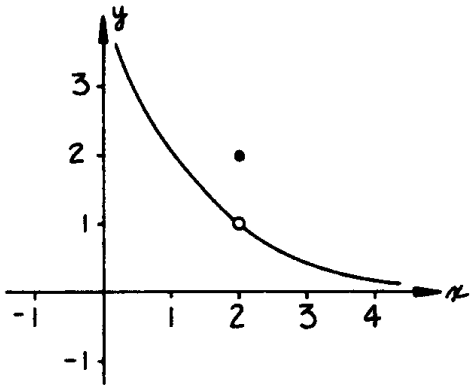
(c) $\lim_{x \to -3} f(x)$

(d) $f(-3)$

(e) $f(0)$



2.1.4 For the function f graphed to the right, find



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

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

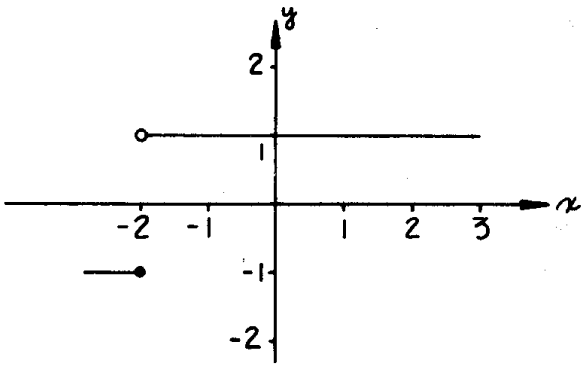
(c) $\lim_{x \to 2} f(x)$

(d) $f(2)$

(e) $\lim_{x \to 0^+} f(x)$

(f) $\lim_{x \to +\infty} f(x)$

2.1.5 For the function g graphed to the right, find



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

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

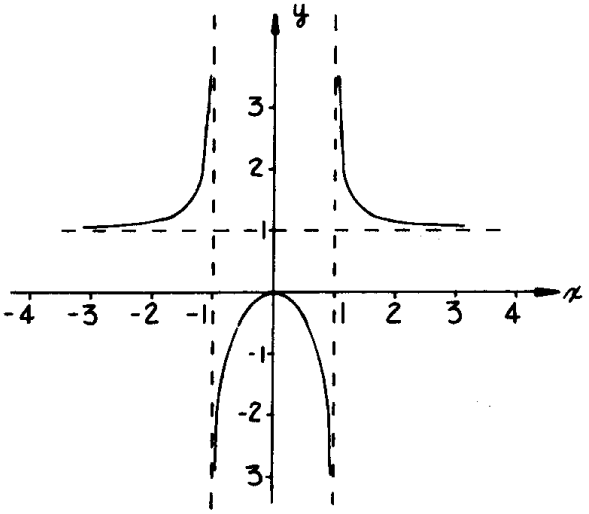
(c) $\lim_{x \to -2} g(x)$

(d) $g(-2)$

(e) $\lim_{x \to +\infty} g(x)$

(f) $\lim_{x \to -\infty} g(x)$

2.1.6 For the function f graphed to the right, find



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

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

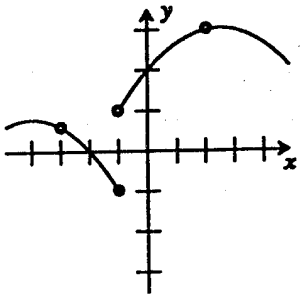
(c) $\lim_{x \to -1} f(x)$

(d) $f(-1)$

(e) $\lim_{x \to +\infty} f(x)$

(f) $\lim_{x \to -\infty} f(x)$

2.1.7

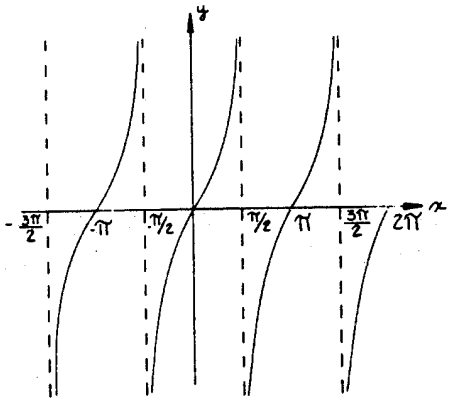


For the function h graphed above, find

(a) $h(-3)$ (b) $h(2)$ (c) $\lim_{x\to -1^-} h(x)$

(d) $\lim_{x\to -1^+} h(x)$ (e) $\lim_{x\to -1} h(x)$ (f) $f(-1)$

2.1.8 For the function ϕ graphed to the right, find



(a) $\lim_{x\to \pi/2^-} \phi(x)$

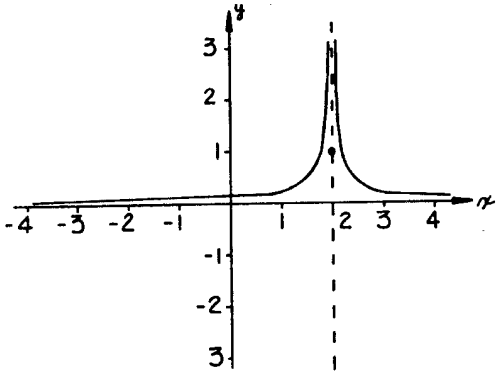
(b) $\lim_{x\to \pi/2^+} \phi(x)$

(c) $\lim_{x\to \pi/2} \phi(x)$

(d) $\phi(\pi/2)$

(e) Can you identify this function?

2.1.9 For the function f graphed to the right, find



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

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

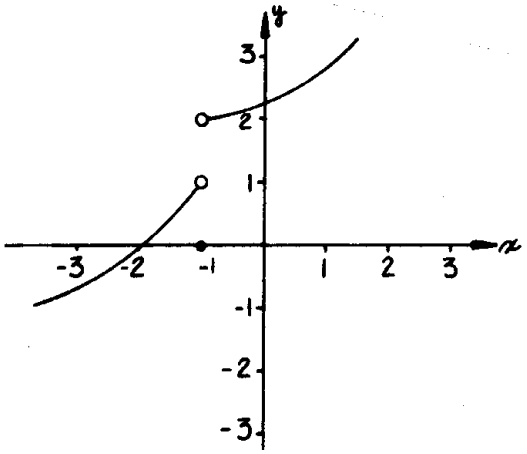
(c) $\lim_{x\to 2} f(x)$

(d) $f(2)$

(e) $\lim_{x\to -\infty} f(x)$

(f) $\lim_{x\to +\infty} f(x)$

2.1.10 For the function f graphed to the right, find



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

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

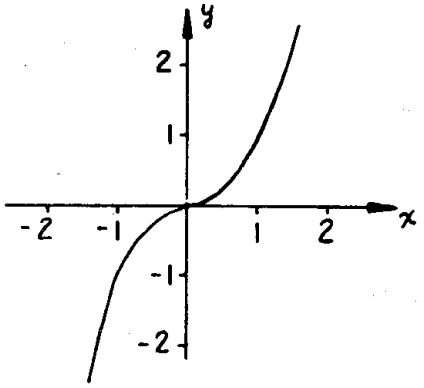
(c) $\lim_{x \to -1} f(x)$

(d) $f(-1)$

(e) $\lim_{x \to +\infty} f(x)$

(f) $\lim_{x \to -\infty} f(x)$

2.1.11 For the function f graphed to the right, find



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

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

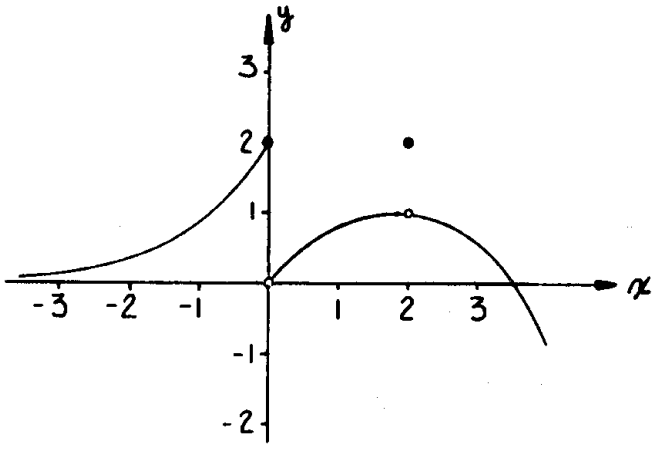
(c) $\lim_{x \to 1} f(x)$

(d) $f(1)$

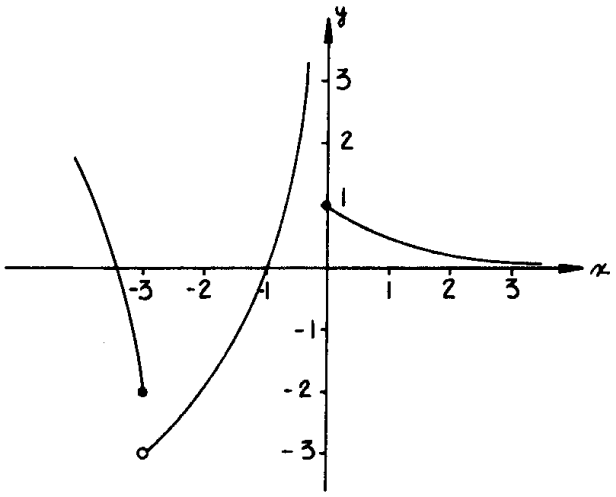
(e) $\lim_{x \to +\infty} f(x)$

(f) $\lim_{x \to -\infty} f(x)$

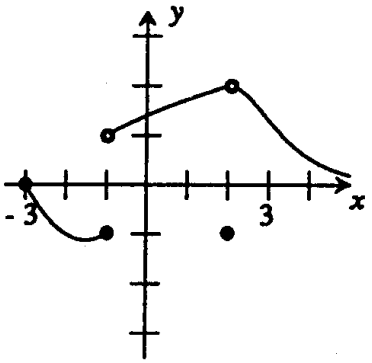
2.1.12 Consider the function f graphed to the right. For what values of x_0 does $\lim_{x \to x_0} f(x)$ exist?



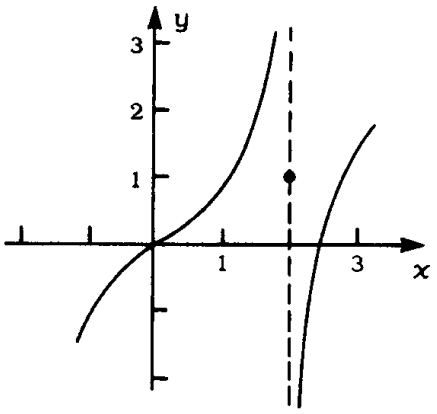
2.1.13 Consider the function g graphed to the right. For what values of x_0 does $\lim_{x \to x_0} g(x)$ exist?



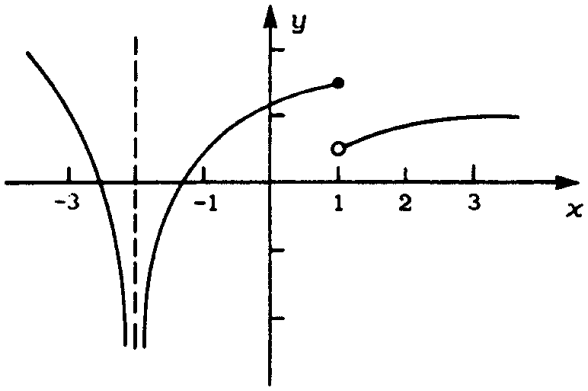
2.1.14 Consider the function g graphed to the right. For what values of x_0 does the $\lim_{x \to x_0} g(x)$ exist?



2.1.15 Consider the function f graphed to the right. For what values of x_0 does $\lim_{x \to x_0} f(x)$ exist?



2.1.16 Consider the function f graphed to the right. For what values of x_0 does $\lim_{x \to x_0} f(x)$ exist?



2.1.17 Approximate $\lim_{x \to 2} x^2$ by evaluating x^2 at appropriate values of x.

2.1.18 Approximate $\lim_{x \to 2} \dfrac{2x}{\sin x}$ by evaluating $\dfrac{2x}{\sin x}$ at appropriate values of x.

2.1.19 $\lim_{x \to +\infty} \dfrac{3 + 2x}{x}$ is equivalent to what limit as x nears 0?