

1. For the function g whose graph is given, state the value of each quantity, if it exists. If it does not exist, explain why.

(a) $\lim_{t \rightarrow 0^-} g(t)$

(d) $\lim_{t \rightarrow 2^-} g(t)$

(g) $g(2)$

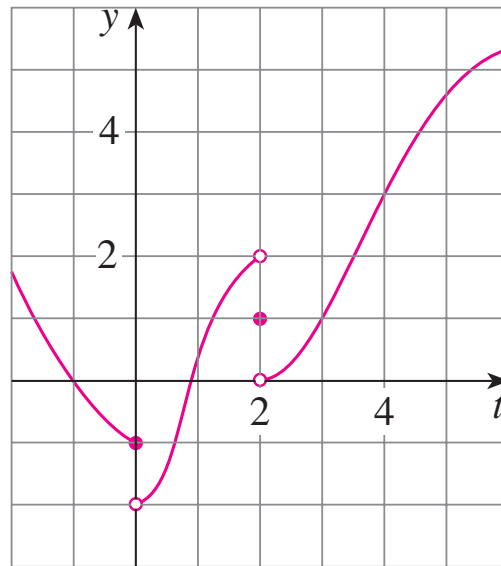
(b) $\lim_{t \rightarrow 0^+} g(t)$

(e) $\lim_{t \rightarrow 2^+} g(t)$

(h) $\lim_{t \rightarrow 4} g(t)$

(c) $\lim_{t \rightarrow 0} g(t)$

(f) $\lim_{t \rightarrow 2} g(t)$



2. For the function A whose graph is shown, state the following.

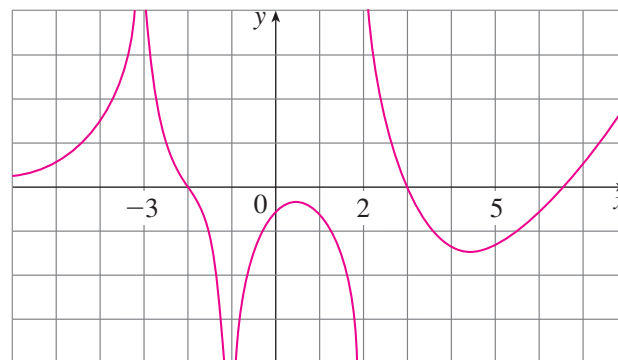
(a) $\lim_{x \rightarrow -3} A(x)$

(c) $\lim_{x \rightarrow 2^+} A(x)$

(e) The equations of the vertical asymptotes

(b) $\lim_{x \rightarrow 2^-} A(x)$

(d) $\lim_{x \rightarrow -1} A(x)$



3. For the function h whose graph is given, state the value of each quantity, if it exists. If it does not exist, explain why.

(a) $\lim_{x \rightarrow -3^-} h(x)$

(e) $\lim_{x \rightarrow 0^-} h(x)$

(i) $\lim_{x \rightarrow 2} h(x)$

(b) $\lim_{x \rightarrow -3^+} h(x)$

(f) $\lim_{x \rightarrow 0^+} h(x)$

(j) $h(2)$

(c) $\lim_{x \rightarrow -3} h(x)$

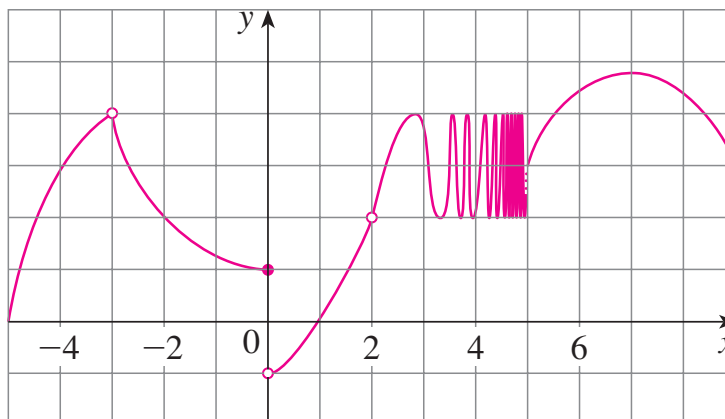
(g) $\lim_{x \rightarrow 0} h(x)$

(k) $\lim_{x \rightarrow 5^+} h(x)$

(d) $h(-3)$

(h) $h(0)$

(l) $\lim_{x \rightarrow 5^-} h(x)$



4. Let

$$f(x) = \begin{cases} 1 + x & \text{if } x < -1 \\ x^2 & \text{if } -1 \leq x \leq 1 \\ 2 - x & \text{if } x \geq 1 \end{cases}$$

Sketch the graph of the function and use it to determine the limits $\lim_{x \rightarrow -1} f(x)$ and $\lim_{x \rightarrow 1} f(x)$ if they exist. If they do not, explain why.

5. Let

$$f(x) = \begin{cases} 1 + \sin x & \text{if } x < 0 \\ \cos x & \text{if } 0 \leq x \leq \pi \\ \sin x & \text{if } x > \pi \end{cases}$$

Compute the limits $\lim_{x \rightarrow 0} f(x)$ and $\lim_{x \rightarrow \pi} f(x)$ if they exist. If they do not, explain why.

6. Sketch the graph of an example of a function f that satisfies all of the given conditions.

$$\lim_{x \rightarrow 0} f(x) = 1, \lim_{x \rightarrow 3^-} f(x) = -2, \lim_{x \rightarrow 3^+} f(x) = 2,$$

$$f(0) = -1, f(3) = 1$$

7. Determine the infinite limit.

(a) $\lim_{x \rightarrow 5^+} \frac{x+1}{x-5}$

(e) $\lim_{x \rightarrow 3^+} \ln(x^2 - 9)$

(b) $\lim_{x \rightarrow 5^-} \frac{x+1}{x-5}$

(f) $\lim_{x \rightarrow 0^+} \ln(\sin x)$

(c) $\lim_{x \rightarrow 1} \frac{2-x}{(x-1)^2}$

(g) $\lim_{x \rightarrow \pi^-} \cot x$

(d) $\lim_{x \rightarrow 3^-} \frac{\sqrt{x}}{(x-3)^5}$

(h) $\lim_{x \rightarrow 2^-} \frac{x^2 - 2x}{x^2 - 4x + 4}$