

CALCULUS
Simple limit problems
NEW

0170-1. Use the graph of f given below to find the value of each quantity, if it exists.

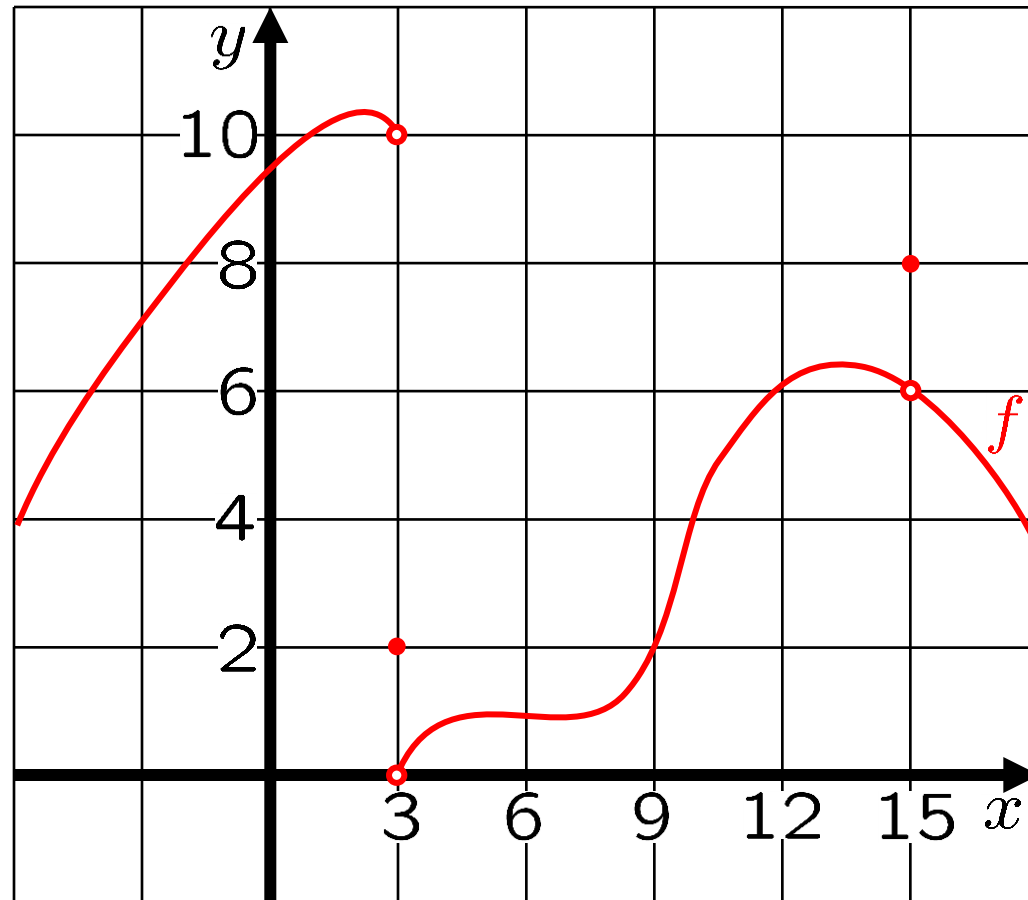
(a) $\lim_{x \rightarrow 3^-} f(x)$

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

(c) $\lim_{x \rightarrow 9} f(x)$

(d) $\lim_{x \rightarrow 15} f(x)$

(e) $f(15)$



0170-2. Use the graph of f given below to find the value of each quantity, if it exists.

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

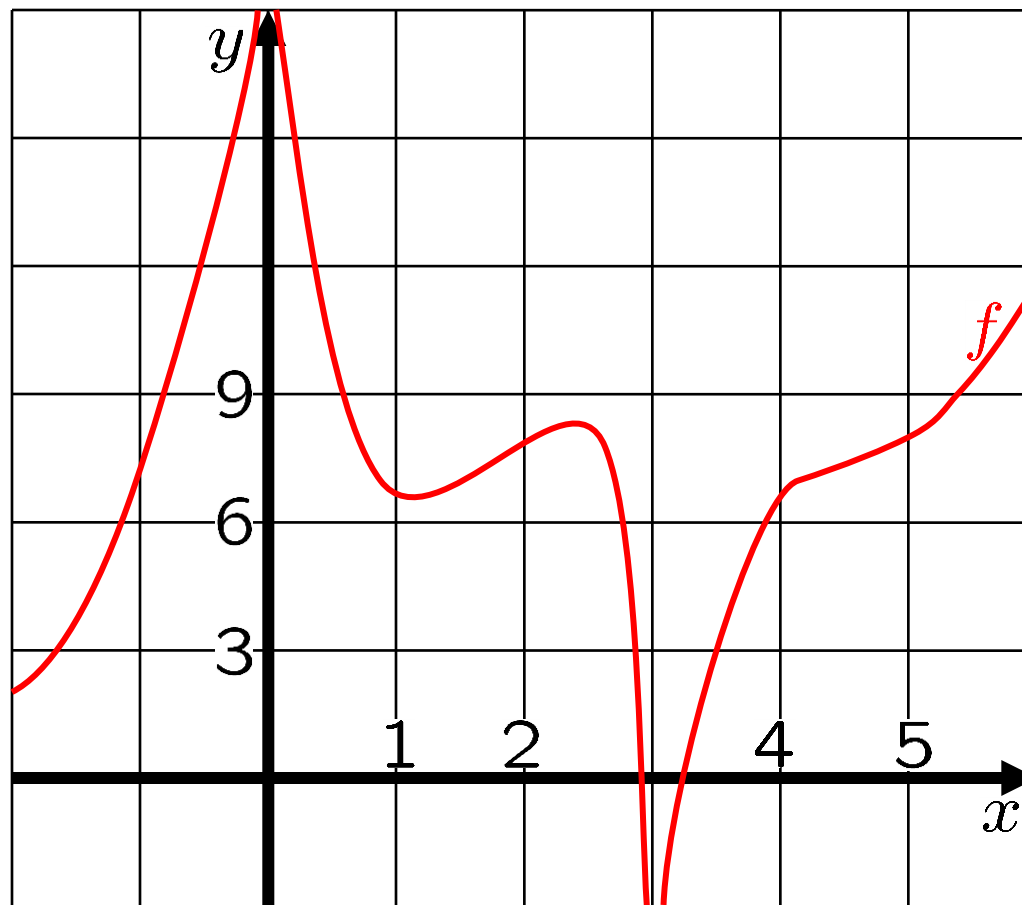
(b) $\lim_{x \rightarrow 0^+} f(x)$

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

(d) $\lim_{x \rightarrow 3^-} f(x)$

(e) $\lim_{x \rightarrow 3^+} f(x)$

(f) $\lim_{x \rightarrow 3} f(x)$



0170-3. Show a graph of a function h s.t.

NEW

$$\lim_{x \rightarrow 2^-} h(x) = 4, \quad \lim_{x \rightarrow 2^+} h(x) = 5, \quad h(2) = 4,$$

$$\lim_{x \rightarrow 3^-} h(x) = -\infty, \quad \lim_{x \rightarrow 3^+} h(x) = \infty,$$

$$\lim_{x \rightarrow 4} h(x) = 2, \quad h(4) = 5,$$

$$\lim_{x \rightarrow -\infty} h(x) = \infty \quad \text{and} \quad \lim_{x \rightarrow \infty} h(x) = \infty.$$

NEW 0170-4. Let $g(s) = \frac{\ln(1 + 3s + s^2)}{s}$.

a. Compute $g(-1)$, $g(-0.1)$, $g(-0.01)$,
 $g(1)$, $g(0.1)$ and $g(0.01)$.

Give your answers to six decimal places.

b. Guess $\lim_{s \rightarrow 0} g(s)$.

0170-5. a. Compute $\lim_{x \rightarrow 1^-} \frac{x^2 - 1}{(x - 1)^3}$,

or explain why the limit
does not exist.

b. Compute $\lim_{x \rightarrow 1^+} \frac{x^2 - 1}{(x - 1)^3}$,

or explain why the limit
does not exist.

c. Compute $\lim_{x \rightarrow 1} \frac{x^2 - 1}{(x - 1)^3}$,

or explain why the limit
does not exist.