The statement "Whether or not $\lim_{x \to a} f(x)$ exists, depends on how $f(a)$ is defined," is true

(a) sometimes,

(b) always,

(c) never.

Find the following limits.

a) $\displaystyle\lim_{x\to 7^-} \frac{x+6}{x-7}$

c) $\displaystyle\lim_{x\to 1^+} \frac{8}{x^3-1}$

b) $\displaystyle\lim_{x\to 4} \frac{3-x}{(x-4)^2}$

d) $\displaystyle\lim_{x\to 1^-} \frac{8}{x^3-1}$

If a function f is not defined at $x = a$,

a) $\lim_{x \to a} f(x)$ cannot exist

b) $\lim_{x \to a} f(x)$ could be 0

c) $\lim_{x \to a} f(x)$ must approach ∞

d) none of the above.

Draw the graph of a function $f(x)$ such that $\lim_{x \to 4} f(x) = 5$ and $f(4) = 5$, or explain why this is impossible.

Draw the graph of a function $g(x)$ such that $\lim_{x \to 4} g(x) = 5$ and $g(4) = 4$, or explain why this is impossible.

Draw the graph of a function $h(x)$ such that $\lim_{x \to 4} h(x) = 5$ and $h(4)$ is undefined, or explain why this is impossible.

Draw the graph of a function $f(x)$ such that $\lim_{x \to 6^-} f(x) = 5$ and $\lim_{x \to 6^+} f(x) = 7$, or explain why this is impossible.

Draw the graph of a function $g(x)$ such that $\lim_{x \to 6^-} g(x) = 5$ and $\lim_{x \to 6^+} g(x) = 7$ and $g(6) = 10$, or explain why this is impossible.

Draw the graph of a function $h(x)$ such that $\lim_{x \to 6^-} g(x) = 5$ and $\lim_{x \to 6^+} g(x) = 5$ and $\lim_{x \to 6} g(x)$ is undefined, or explain why this is impossible.

If all that you know about a function $g(x)$ is that $g(5) = -3$ and $g'(5) = 4$, what is your best estimate of $g(7)$?