

Problem statement For each of the four cases below, sketch a graph of a function that satisfies the stated conditions. In each case, the *domain* of the function should be *all real numbers*.

a) $\lim_{x \rightarrow 2} f(x) = 3$ and $f(2) = 4$.

b) $\lim_{x \rightarrow 0} f(x)$ does not exist, and $|f(x)| < 2$ for all x .

c) $\lim_{x \rightarrow 1} f(x)$ exists and its value is $f(1) + 2$.

d) $\lim_{x \rightarrow -1^-} f(x)$ and $\lim_{x \rightarrow -1^+} f(x)$ do not exist, $|f(x)| < 3$ for all x , and $f(-1) = -2$.