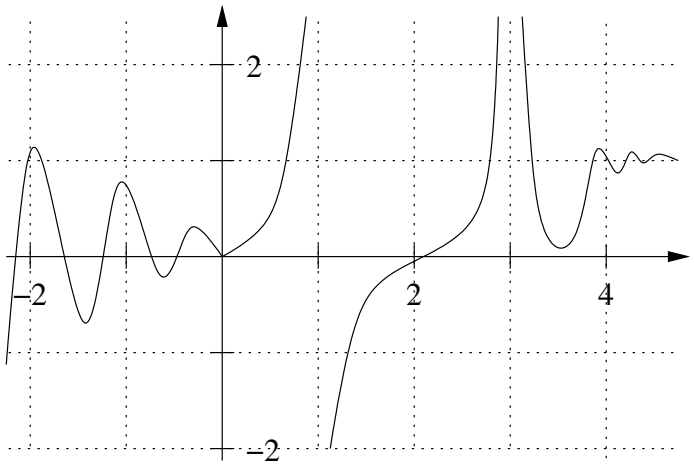
1. Suppose $f(x)$ has the following graph:



   (a) Does $\lim_{x\to\infty} f(x)$ exist? If so, what is its value?

   (b) Does $\lim_{x\to-\infty} f(x)$ exist? If so, what is its value?

   (c) For which values a is $\lim_{x\to a} f(x) = +\infty$? $-\infty$?

   (d) For which values a is $\lim_{x\to a^+} f(x) = +\infty$? $-\infty$?

   (e) What are the horizontal and vertical asymptotes of $y = f(x)$?

2. Is it possible that there exists a function $g(x)$ such that:

$$\lim_{x\to\infty} g(x) = 4 \qquad \lim_{x\to-\infty} g(x) = 0 \qquad g(-4) = -3$$
$$\lim_{x\to 2^+} g(x) = 5 \qquad \lim_{x\to 2^-} g(x) = 3 \qquad g(2) = 2$$
$$\lim_{x\to 0^+} g(x) = +\infty \qquad \lim_{x\to 0^-} g(x) = +\infty \qquad g(0) = -5$$

   If this is possible, draw one possible graph of g; if not, explain why it is not possible.