1. Write the following statements using logical notation and negate them.
   (a) Every classroom has a chair that is not broken.

   (b) $f : \mathbb{R} \to \mathbb{R}$ is unbounded if for every real number M, some real number x satistfies $\mid f(x) \mid > M$.

2. Define what is meant by "a sequence $\{a_n\}_{n\geq 1}$".

3. We say $\lim_{n\to\infty} a_n = L$ if

   For every $\epsilon > 0$ there exists $N > 0$ such that $\mid a_n - L \mid < \epsilon$ whenever $n \geq N$.

   (a) Write a logical statement that says $\lim_{n\to\infty} a_n \neq L$

   (b) Write a logical statement that says $\lim_{n\to\infty} a_n \neq a$ for any $a \in \mathbb{R}$.

4. If $f : \mathbb{R} \to \mathbb{R}$ is unbounded then construct a sequence $\{a_n\}$ such that $\lim_{n\to\infty} \mid f(a_n) \mid = \infty$