1. Let $f(x) = \frac{3x+1}{x+\sqrt{4x^2+5}}$.
   (a) Compute $\lim_{x\to\infty} f(x)$.
   (b) Compute $\lim_{x\to-\infty} f(x)$. [Warning: $\sqrt{(-10)^2} = 10$, not -10.]
   (c) Design a continuous function $g(x)$ so that $\lim_{x\to\infty} g(x) = -2$ and $\lim_{x\to-\infty} g(x) = 0$.
   (d) How many different horizontal asymptotes can a function have?