

Math 180, Quiz 2: Thursday, January 31, 2013

Take fifteen minutes to complete this quiz. Please show all your work, and write your name on the front *and* back of the paper before turning it in. Make sure to show all relevant work.

1. (4 pts) Consider the function $g(x) = \frac{\sqrt{9x^2 + 1} - 2x}{1 - x}$. Find $\lim_{x \rightarrow \infty} g(x)$ and $\lim_{x \rightarrow -\infty} g(x)$.

2. (5 pts) Consider the function $f(x) = \frac{x + 1}{x^2 + 3x + 2}$.

(a) Find all vertical asymptotes, $x = a$, of $f(x)$.

(b) At each vertical asymptote $x = a$ of $f(x)$, evaluate $\lim_{x \rightarrow a^-} f(x)$, $\lim_{x \rightarrow a^+} f(x)$, and $\lim_{x \rightarrow a} f(x)$ or indicate that they do not exist.

3. (1 pt) Consider the function $s(t) = \frac{t - t^2}{t}$. Find $s(0)$ and $\lim_{t \rightarrow 0} s(t)$ or indicate that they do not exist.