Quiz 1A, Calculus I - Calculators Okay

Dr. Graham-Squire, Fall 2017

Name: _____

1. (5 points) At what two x-value(s) is $f(x)$ discontinuous? For each point of discontinuity, explain what part of the definition of continuity fails at that point, and how the function fails it. A graph might help you, but it is NOT enough to just reference the graph.

$$f(x) = \begin{cases} \dfrac{x^2+8x+15}{x+3} & \text{if } x \leq 2 \\ \sqrt{x+7} & \text{if } x > 2 \end{cases}$$

2. (5 points) Calculate the limits.

   (a) $\lim_{x \to 4} \dfrac{\sqrt{x-3}-1}{x-4}$. You should be able to solve this one without using a calculator. Make sure to show your work and use correct limit notation!

   (b) $\lim_{x \to \infty} \dfrac{5x^4 - 3x + 7}{2x^4 + 9x^2}$. You can solve this one with or without a calculator. In either case, show your work and/or explain your reasoning.