Math 1151   Name:_____

Quiz 3

20 points

General Directions: Answer each question thoroughly. Incorrect answers with work shown may receive partial credit, but unsubstantiated answers will receive NO CREDIT. I do not want (decimal) approximations unless specifically asked for. I want the exact numbers. Justify all claims using calculus concepts (i.e., theorems, definitions, etc.). I am looking for mathematical logic and reasoning. Show all of your work!! Explain! Explain! Explain!

1. Given $f(x) = \dfrac{2}{x+9}$, answer the following:

   (a) (2 points) Evaluate $\lim\limits_{x \to -9^-} f(x)$.

   (b) (2 points) Evaluate $\lim\limits_{x \to -9^+} f(x)$.

   (c) (2 points) Evaluate $\lim\limits_{x \to -9} f(x)$.

   (d) (4 points) Is $x = -9$ a vertical asymptote of $f(x)$? Explain.

2. Given $g(x) = \dfrac{x^2 - 9}{2x^2 + 3x - 7}$, answer the following:

(a) (4 points) Evaluate $\lim\limits_{x \to \infty} g(x)$.

(b) (4 points) Evaluate $\lim\limits_{x \to -\infty} g(x)$.

(c) (2 points) Is $y = \dfrac{1}{2}$ a horizontal asymptote of $g(x)$? Explain.