Math 1271 - Lectures 010 and 030 **Name (Print):** _____
Fall 2017
Quiz 1II
09/21/17
Time Limit: 25 Minutes Section _____

You may *not* use your books, notes, graphing calculator, phones or any other internet devices on this exam.

You are **required** to show your work on each problem on this quiz. If you are unable to demonstrate your answer in full rigor, supporting evidence may possibly be redeemed for partial credit.

Problem	Points	Score
1	3	
2	3	
3	4	
Total:	10	

1. Find the real numbers within the interval I at which f is *not* continuous. State whether f is continuous from the right, the left, or neither. Justify with words and/or a graph of $y = f(x)$.

   (a) (1 point) $f(x) = \dfrac{1}{x^2 + 5x - 14}$ $I = (-\infty, \infty)$

   (b) (1 point) $f(x) = \dfrac{\cos\frac{x}{2}}{\sin 2x}$ $I = [-\pi, \pi]$

   (c) (1 point) $f(x) = \begin{cases} 3^x & x \leq 2 \\ -3x + 15 & 2 < x \leq 4 \\ \sqrt{x} & x > 4 \end{cases}$ $I = (-3, 8)$

2. (3 points) Sketch a graph of a function $f(x)$ satisfying the following properties: $\lim_{x\to-\infty} f(x) = -1$, $\lim_{x\to-1^+} f(x) = 3$, $\lim_{x\to 0} f(x) = \infty$, $\lim_{x\to 2} f(x) = 4$, $f(2) = 3$, $\lim_{x\to\infty} f(x) = 1$, f has only two points of discontinuity in the real numbers.

3. Evaluate the following limits. Justify your response carefully and fully.

   (a) (2 points) $\lim_{x\to\infty} \dfrac{\cos^2(x)}{x^2-3}$

   (b) (2 points) $\lim_{x\to-\infty} \dfrac{|3x^3-1|}{x^3+2x^2}$