Math 2554 Quiz 3: $\oint$ 2.6-2.7
Tues 16 Sep 2014

Name: _____

You have 20 minutes to complete this quiz. Eyes on your own paper and good luck!

1. **Definitions/Concepts.**

    (a) (3 pts) The function f is **continuous at the point** a means it satisfies the Continuity Checklist:

    (b) (2 pts) "The limit of $f(x)$ as x approaches a equals L" means that for any positive number ϵ, there is another positive number δ such that

    _____   whenever   _____

2. **Questions/Problems.** Suppose $\lim_{x\to 3} f(x) = 4$, where f is the function in Figure 1.
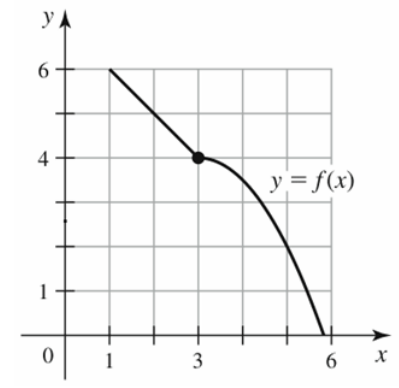

Figure 1: $f(x)$ (Briggs, W. and Cochran, L. *Calculus: Early Transcendentals*, p. 116)

What must δ equal in order to satisfy $|f(x) - 4| < \epsilon$ whenever $0 < |x - 3| < \delta$, for

    (a) (1 pt) $\epsilon = 2$?

    (b) (1 pt) $\epsilon = \frac{1}{2}$?

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(c) (1 pt) Write a formula for δ in terms of ϵ that works, once ϵ gets small enough.

(d) (ChAlLeNgE pRoBlEm) Justify your answer to (c).

3. **Computations/Algebra.** (2 pts) Let
$$g(x) = \begin{cases} \frac{x^2+3x+2}{x+1} & x \neq -1 \\ k & x = -1 \end{cases}.$$

Using the Continuity Checklist, find the value of k that makes g continuous at the point -1.