

MATH 1A – QUIZ 3

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Name: _____

Instructions: You have 15 minutes to do this quiz, for a total of 10 points. **Show all your work and box your answers!** May your luck be continuous!

(1) (4 points) Show, using the $\epsilon - \delta$ definition of a limit, that:

$$\lim_{x \rightarrow -4} 2x + 2 = -6$$

Date: Friday, September 20th, 2013.

(2) (4 points; 1 point each) Evaluate the following limits or say the limit does not exist:

Note: $-\infty$ points for using l'Hopital's rule (if you know what that is). Also, for your convenience, you don't have to write $\lim_{x \rightarrow a}$ all the time!

(a) $\lim_{x \rightarrow 2} \frac{\sqrt{6-x}-2}{\sqrt{3-x}-1}$

(b) $\lim_{x \rightarrow 3} \frac{x^2-6x+9}{x^2-3x+2}$

(c) $\lim_{x \rightarrow 2} \frac{|x-3|+1}{|x-2|}$

(d) $\lim_{x \rightarrow 0} \frac{1}{x\sqrt{1+x}} - \frac{1}{x}$

(3) (2 points) Is the following function f continuous at 0? Why or why not? **Explain!**

$$f(x) = \begin{cases} x^2 \sin\left(\frac{1}{x^2}\right) & \text{if } x \neq 0 \\ 1 & \text{if } x = 0 \end{cases}$$