Math 241: HW 2

Due on Friday, September 6

Fall '13

John *"Curlee"* **Robertson**

Problem 1

Compute the following, you MUST show your work (algebraic simplifications etc.) to get credit however, you may (and should) use wolfram alpha (see link on my web page) to check your answers.

$$a) \quad \lim_{x \to 4} \frac{x^2 - 16}{x - 4}$$

$$b) \quad \lim_{x \to 3} \frac{x^2 - 16}{x - 4}$$

$$c) \quad \lim_{x \to 99} \frac{\sqrt{x + 1} - 10}{x - 99}$$

$$d) \quad \lim_{x \to 2} \frac{x^3 - 8}{x^4 - 16}$$

Hints: b) is easy. You may want to look up "difference of cubes" for d), or (even better) derive it from polynomial division.

Problem 2

In class we talked about how $\lim_{x \to 0} \frac{|x|}{x}$ does not exist. We will talk more about this on Friday but, can you give me another example of a function, $f(x)$, and corresponding x-value, c, whose limit, $\lim_{x \to c} f(x)$ does not exist? There is no wrong answer to this question because I have not stated the precise definition of a limit however, I would like you to take this opportunity to ponder... have some fun... try to impress me.