

Math 251: Pledged Set 3

Due: September 23, 2008

This is a pledged set. Therefore, no outside help from book, calculator, or other people.

1. Prove using the ϵ, δ definition that

$$\lim_{x \rightarrow 2} (14 - 5x) = 4$$

2. Prove using the ϵ, δ definition that

$$\lim_{x \rightarrow -3} (1 - 4x) = 13$$

3. Use the definition of continuity and the properties of limits to show that

$$2\sqrt{3-x}$$

is continuous on $(-\infty, 3]$.

4. Sketch the graph of an example of a function f that satisfies the following:

$$f(0) = 0, \quad f(1) = 1, \quad \lim_{x \rightarrow \infty} f(x) = 0, \quad f \text{ is odd}$$

5. Find the limit of

$$\lim_{x \rightarrow \infty} \frac{3x + 5}{x - 4}$$