Mathematics 3790H – Analysis I: Introduction to analysis

TRENT UNIVERSITY, Winter 2015

Assignment #1

Basic epsilonics

Due on Friday, 16 January, 2015.

This assignment is a warm-up using something that you should have seen some version of in first-year caculus, the ε–δ definition of limits. Please look it up in our present text or in your old calculus textbook!

1. Use the ε–δ definition of limits to verify that $\lim_{x\to 5}(13x - 31) = 34$. *[3]*

2. Use the ε–δ definition of limits to verify that $\lim_{x\to -3} x^2 \neq 4$. *[3]*

3. Use the ε–δ definition of limits to verify that $\lim_{x\to c} x^2 = c^2$ for every real number c. *[4]*

Hint: You *may* find it useful to consider the cases $c = 0$ and $c \neq 0$ separately in doing **3**.