The University of Waikato
Department of Mathematics

Elements of Analysis math252-10B Tutorial 5th August 2010

1. **Use ε and δ_ε to prove that**

$$\lim_{x\to 2} 5x = 10.$$

Show that the same δ_ε works to show that $\lim_{x\to 2} 5x + 20 = 30$ and

$$\lim_{x\to 2} \frac{5x(x-2)}{x-2} = 10.$$

2. **Use ε and δ_ε to prove that**

$$\lim_{x\to 2} x^2 + 5x = 14.$$

Hint: make a preliminary choice $\delta_1 = 1$ to bound one factor.

3. **Use ε and δ_ε to prove that**

$$\lim_{x\to 4} \frac{1}{x-2} = 1/2.$$

Hint: make a preliminary choice $\delta_1 = 1$ to bound one factor.