

MATH2060B Exercise 2

Deadline: Jan 20, 2015.

The questions are from Bartle and Sherbert, *Introduction to Real Analysis*, Wiley, 4th edition, unless otherwise stated.

Section 6.2 Q.2(c), 3(d), 5, 6, 7, 9, 10, 11, 13, 18.

Supplementary Exercises

1. Let f be a differentiable function defined on $(0, \infty)$. Suppose f is bounded, i.e. there exists a constant M such that

$$|f(x)| \leq M \quad \text{for all } x \in (0, \infty).$$

Show that there exists a sequence of numbers $\{x_n\}$, such that

$$\lim_{n \rightarrow \infty} x_n = +\infty, \quad \text{and} \quad \lim_{n \rightarrow \infty} f'(x_n) = 0.$$