Exercise Supplemental 1: Suppose $(a_n) \to a$ and $a \neq 0$. Show that there exists $N \in \mathbb{N}$ such that if $n \geq N$, then $a_n \neq 0$.

Exercise Supplemental 2:

1. Show that if $a, b \geq 0$ and $a > b$, then $\sqrt{a} > \sqrt{b}$.
2. Exercise 2.3.1(a)

Exercise 2.3.3:

Exercise 2.3.10: For full credit, all arguments should be short!

Exercise Supplemental 3: Show that if $|b_n| \to 0$, then $b_n \to 0$. Then show that this statement is false if we replace 0 with any other real number.

Exercise 2.3.10 (c):

Exercise C: onsider the series $\sum_{n=1}^{\infty} 1/n^2$. Give a careful proof by induction that the partial sums

$$s_k = \sum_{n=1}^{k} 1/n^2$$

satisfy $s_k < 2 - 1/k$.

Exercise 2.4.3(a): Hint: Use the Monotone Convergence Theorem!