<u>exercise 1</u>:
Let a_n be a sequence which converges to a positive number A. We showed in class that there is an N in $\mathbb{N}$ such that for all $n > N$ in $\mathbb{N}$, $|a_n| > \frac{A}{2}$. From there, show that $\frac{1}{a_n}$ converges to $\frac{1}{A}$.

<u>exercise 2</u>:
Optional 2.6.G from Davidson - Donsig.

<u>exercise 3</u>:
Prove or disprove:
Let a_n be a sequence of real numbers. If $\lim_{n\to\infty}(a_{n+1} - a_n) = 0$, then a_n is convergent.

<u>exercise 4</u>:
Let q be a fixed positive number. Show that the sequence $a_n = \frac{q^n}{n!}$ is eventually decreasing.

<u>exercise 5</u>:
2.6.B from Davidson - Donsig. **Hint**: set $f(x) = \sqrt{5 + 2x}$. Solve $f(x) = x$ and the inequality $x \leq f(x)$. Prove by induction that $0 \leq a_n \leq a_{n+1} \leq 1 + \sqrt{6}$.

<u>exercise 6</u>:
2.7.A

<u>exercise 7</u>:
2.7.G. **Hint**: any integer p can written as $3n - 1$, $3n$, or $3n + 1$.