2.6.4 Assume $(a_n), (b_n)$ are Cauchy. We must show that the series formed by $c_n = |a_n - b_n|$ is Cauchy. Let $\epsilon > 0$. Since $(a_n), (b_n)$ are Cauchy then there exists $N_1, N_2 \in \mathbb{N}$ such that for all $n_1, m_1 \geq N_1, |a_{n_1} - a_{m_1}| < \frac{\epsilon}{2}$ and for all $n_2, m_2 \geq N_2, |b_{n_2} - b_{m_2}| < \frac{\epsilon}{2}$. Let $N = \max(N_1, N_2)$. Therefore, for all $m, n \geq N$,

$$\begin{aligned}
|c_n - c_m| &= ||a_n - b_n| - |a_m - b_m|| \text{ definition of } c_n \\
&\leq |a_n - b_n - a_m + b_n| \text{reverse triangle inequality} \\
&= |a_n - a_m + b_m - b_n| \\
&\leq |a_n - a_m| + |b_n - b_m| \text{trianlge inequality} \\
&< \frac{\epsilon}{2} + \frac{\epsilon}{2} \\
&= \epsilon.
\end{aligned}$$