Assignment 9

MA06 Complex Analysis Deadline 11:59 AM, 20190122

1. Write out the first five terms of the given sequence $\{2 + (-i)^n\}$.
2. Determine whether the given sequence converges or diverges.
   (a) $\{\frac{3ni+2}{n+ni}\}$
   (b) $\{\frac{n+i^n}{\sqrt{n}}\}$
3. Show that the given sequence $\{\frac{4n+3ni}{2n+i}\}$ converges to a complex number L by computing $\lim_{n\to\infty} \mathrm{Re}(z_n)$ and $\lim_{n\to\infty} \mathrm{Im}(z_n)$. (Hint: Theorem 6.1)
4. Determine whether the given geometric series is convergent or divergent. If convergent, find its sum.
   (a) $\sum_{k=0}^{\infty} \frac{1}{2} i^k$
   (b) $\sum_{k=0}^{\infty} 3 \left(\frac{2}{1+2i}\right)^k$

Notice: Please write Your Name and Student ID when you submit.