

HOMEWORK FOR WEEK OF FEB 8

All section numbers refer to Ablowitz-Fokas.

- (1) Problems 1, 2, 4 and 5 in Section 3.1.
- (2) Problems 1, 2, 6 and 7 in Section 3.2.
- (3) Problem 3 in Section 3.4. This one is tricky but is worth working through to better understand the theory. It can be broken into parts:

- a) Use Theorem 3.1.2 (the Weierstrass M Test) to show that the series converges uniformly for $|z| \leq R$ for any $R > 0$.
- b) Explain why the function

$$b_n(z) = \frac{1}{e^n n^z}$$

is entire.

- c) Use a) and b) as well as Theorem 3.4.4 to conclude that the function is analytic for $|z| < R$ for each $R > 0$ (by showing this it follows that the function is indeed entire).