MATH310 Homework 2022-08-09
Due Gradescope 11:59pm 2022-08-11

1. Prove that: [25 pts]

$$\left\{\frac{2^n + 2}{3^n + 1}\right\} \longrightarrow 0$$

2. Prove that: [25 pts]

$$\left\{\frac{30n}{6n + 1}\right\} \not\longrightarrow \frac{499}{100}$$

   Do not do this by proving that the sequence converges to something else, rather prove that the sequence satisfies the negation of the limit definition.

3. Prove that the following sequence diverges: [25 pts]

$$\left\{n^3\right\}$$

4. Prove that the following sequence diverges: [25 pts]

$$\left\{\frac{n^2 + 1}{n + 1}\right\}$$