Name_____

Name_____

Name_____

1. The power set of the natural numbers $\mathcal{P}(\mathbb{N})$ is uncountable, (Cantor's Theorem, p. 21). Other sets that are uncountable include: $\mathbb{R}$, the irrationals, finite or infinite intervals. Name 2 other sets, different from the ones already named, that are uncountable.

2. Write out the first 5 terms of the following sequences.

    (a) $x_n := \dfrac{(-1)^n}{n(n+1)}$

    (b) $x_1 := 2$, $x_{n+1} := \dfrac{1}{2}(x_n + 2/x_n)$

3. Use the definition of the limit of a sequence to prove the following limit: $\lim \left(\dfrac{(-1)^n}{n(n+1)} \right) = 0$.