This weightless assignment is due on Crowdmark by Monday, March 8, at 9:00pm EST. It does not count toward your course grade.

Exercise 1. Read Spivak Chapter 22, "Infinite Sequences." Consider the sequence $a_n := e^{\cos(n\pi/6)}$.

(a) Is $A := \{a_n \mid n \in \mathbb{N}\}$ bounded. How many elements does it have?

(b) Does $\{a_n\}$ contain a strictly increasing or decreasing subsequence? Give one or justify why none exists. [Hint: part (a) should help].

(c) List the peak points of $\{a_n\}$, if they exist.

(d) Does $\{a_n\}$ contain a weakly increasing or weakly decreasing subsequence? Give one (and its limit) or justify why none exists.

(e) [Extra: modify $\{a_n\}$ so it converges.]