

Homework 5 – Due February 12

* 7.3.1, 7.3.3, 7.3.4, 7.3.7, 7.3.9 [part (c) requires software and is optional].

* Is \mathbb{Q} [the rational numbers] open in \mathbb{R} [the real numbers]? Is it closed?

* Find the accumulation points of each sequence x_n :

(a) $(-1)^n \left(1 - \frac{1}{n}\right)$ in \mathbb{R} .

(b) $\left(\cos\left(\frac{n\pi}{3}\right), \sin\left(\frac{n\pi}{3}\right)\right)$ in \mathbb{R}^2 .

(c) $(\cos(n), \sin(n))$ in \mathbb{R}^2 . [Proof not required. Trust your intuition.]