Mathematics 3A03 Real Analysis I
Fall 2019 ASSIGNMENT 4

This assignment is **due** on **Tuesday 5 November 2019 at 2:25pm**.
PLEASE NOTE that you must **submit online** via crowdmark.
You will receive an e-mail from crowdmark with the required link.
Do **NOT** submit a hardcopy of this assignment.

Note: Not all questions will be marked. The questions to be marked will be determined after the assignment is due.

THIS IS A DRAFT VERSION OF THE ASSIGNMENT. THE FINAL VERSION OF THE ASSIGNMENT WILL BE POSTED AS SOON AS IT IS READY. – DE

1. In each part of this problem, the function f is defined by the formula

$$f(x) = \sqrt{|x|}\,. \tag{♡}$$

Pay close attention to the domain of the function in each part and consider the statement

$$\lim_{x\to 2} f(x) = \sqrt{2}\,. \tag{♠}$$

Does statement (♠) make sense for the given domain? If not, why not? If statement (♠) does make sense, then either prove or disprove it directly from the ε-δ definition of a limit.

(a) $f : \mathbb{R} \to \mathbb{R}$.

(b) $f : \mathbb{Q} \to \mathbb{R}$.

(c) $f : \mathbb{Z} \to \mathbb{R}$.