

ASSIGNMENT 5

Due: 17 October, 11:59pm

- (1) Let (X, d) be a metric space. A set $A \subseteq X$ is said to be closed if $X \setminus A$ is open. Then prove the following property. If $A \subseteq X$ is closed, then A contains all its limit points.
- (2) Prove that $\sqrt{2}$ is irrational.
- (3) Prove that \mathbb{Q} is not closed in \mathbb{R} . (Hint: Problem (5) in Assignment 4 may be used here)