Directions. Please submit your answer to the following problem in a L\TeX-prepared document. Class participants are encouraged to prepare solutions in a collaborative mode but to prepare their to-be-submitted write-ups individually. The consequences of sharing files, electronic or otherwise, are discussed in the course syllabus.\footnote{If the wording of this problem was discussed in detail in the classroom, the course instructor expects to see similar phrases and sentences in reading the submissions.}

Please include the problem number along with a statement of the problem in your submission. Please also include your e-mail address.

Problem.

A. Prove that every convergent sequence in a metric space is a Cauchy sequence.

B. Provide an example of a Cauchy sequence, in a metric space, that is not convergent.