Directions. Please submit your answer to the following problem in a LaTeX-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.¹

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

Problem. Let $\mathcal{F}$ denote an ordered field. Let $x, z \in \mathcal{F}$ such that $x < z$. Prove that there exists $y \in \mathcal{F}$ such that $x < y < z$. (Note that the field is not assumed to be complete.)

¹If 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.