

This miniproject asks you to investigate the concept of *dense* elements of a poset.

Definition: A poset (R, \preceq) is said to be ***dense*** if for all $x \in R$ and $y \in R$ with $x \preceq y$, then there is an element $z \in R$ such that $x \preceq z \preceq y$.

Prove: The poset of the rational numbers with the usual \leq is a dense poset.