Exercise 5.8. [1ZY] *Not all fields are infinite sets. Consider* $X = \{0, 1\}$ *and operations* $0+0 = 1+1 = 0, 0+1 = 1+0 = 1, 0\cdot 0 = 0\cdot 1 = 1\cdot 0 = 0$ *and* $1 \cdot 1 = 1$. *Check that it is a field. Show that it cannot be an ordered field.*