

8. Consider any order that turns  $\mathbb{C}$  into an ordered field. We have that  $i^2 = -1$ , which according to property 1.17 (ii) of ordered fields implies  $i < 0$  since  $i \neq 0$ . Proposition 1.18 (a) implies that  $-i > 0$ . Applying 1.17 (ii), this time with  $x = -i$  and  $y = -i$ , together with proposition 1.16 (d) gives us

$$(-i) \cdot (-i) = i^2 = -1 < 0.$$

But this is a contradicton since we assumed  $\mathbb{C}$  is an ordered field where the condition of 1.17 (ii) must be satisfied.

□