

Let  $(p, q) \in \mathbb{Z} | p \wedge q = 1$  and  $\frac{p}{q} = \sqrt{2}$   
 $\Rightarrow p^2 = 2q^2$   
 $\Rightarrow p^2 | 2$   
 $\Rightarrow p = 1$  or  $p = 2 \Rightarrow p | q$  Contradiction . ■