n integer

$\sqrt{n} = \frac{a}{b}$ rational $\rightsquigarrow$ n is a perfect square.

Assume n is not a perfect square. Then $\sqrt{n} = \frac{a}{b}$ is a rational number that's not an integer, ie, if $\gcd(a,b)=1$, then $b > 1$. Fund. thm of arithmetic tells us that b has a prime factor p.

(want to use p to find a contradiction to the fact that $\gcd(a,b)=1$, like in the $\sqrt{2}$ proof]

$nb^2 = a^2$

$n \mid a^2 \not\Rightarrow n \mid a$

$25 \mid 25$ $\quad 25 \nmid 5$

If $p \mid ab$, then $p \mid a$ or $p \mid b$.