reductio ad absurdum
Proof by Contradiction

- To prove that an assertion is true, we first assume it is false, then show that this assumption leads to a logical contradiction

Proof by Contradiction Example

- **Proposition :**
  $\sqrt{2}$ is irrational

- **Proof :**
  Proof is by contraction. Assume $\sqrt{2}$ is rational. Then
  $$\sqrt{2} = \frac{p}{q},$$
  such that p and q are integers that have no common factors.