THE CONTRAPOSITIVE

# One claim in two forms

A statement and its contrapositive are one claim in two forms, so prove whichever is easier.

BEFORE

Statement $P \to Q$

## If $n^2$ is even, then n is even

The statement to prove

TAKE THE CONTRAPOSITIVE

negate both parts and swap them

SWAP, NOT JUST NEGATE

AFTER

Contrapositive $\neg Q \to \neg P$

## If n is odd, then $n^2$ is odd

Simpler to prove: the negated forms are easier to work with

| | | | |
|---|---|---|---|
| WHAT CHANGED | Both parts were negated, and the condition and the conclusion traded places. | WHAT STAYED | The claim: $P \to Q \equiv \neg Q \to \neg P$, with identical truth tables. |