



False and True



False

Introduction Rule

- There is no introduction rule for false
- Exercise: Why not?

Elimination Rule

- From false, you can prove *anything*
 - Anything! Bwahahahaha
- In practice, this often comes up in proofs of contradiction
 - If you assume the opposite of what you're trying to prove and end up with a proof of false, then you've successfully proved what you were trying to prove
- Textual inference rule:

$$\frac{\{P : Prop\}(f : false)}{P} \text{ false.elim}$$

Example

```
axiom falseIsTrue: false
```

```
example: 0 = 1 :=  
  false.elim falseIsTrue
```

- Really complicated, right?
- Side note: axioms are dangerous, use with care!
 - No, you are not allowed to create an axiom that false is true to help you with your homework or exams!



True

Introduction rule

- The introduction rule for a proof of true is trivial, it's just `true.intro`
 - It requires no arguments
- Textual inference rule:

$$\frac{}{\text{true}} \text{true.intro}$$

```
lemma trueIsTrue: true := true.intro
```

Elimination rule

- There is no elimination rule for true
- Exercise: why not?



Fin