

```
variable (P Q R : Prop)

theorem tc1 : P ∧ Q ↔ Q ∧ P :=
  let a : P ∧ Q → Q ∧ P :=
    fun b : P ∧ Q =>
      let c : P := b.1
      let d : Q := b.2
      let e : Q ∧ P := ⟨d,c⟩
      e
  let f : Q ∧ P → P ∧ Q :=
    fun g : Q ∧ P =>
      let h : Q := g.1
      let i : P := g.2
      let j : P ∧ Q := ⟨i,h⟩
      j
  ⟨a,f⟩
```

```
#print tc1
#reduce tc1
```

-- [b:P∧Q]^1	[b:P∧Q]^1	[g:Q∧P]^2	[g:Q∧P]^2	tc1 := ⟨a,f⟩ where
-----				a := λb:P∧Q.e where
-- c:P	d:Q	i:P	h:Q	c := b.1
-----		-----		d := b.2
-- e:Q∧P				e := ⟨d,c⟩
-- -----1				f := λg:Q∧P.j where
-- a:P∧Q→Q∧P				h := g.1
-----				i := g.2
--				j := ⟨i,h⟩
tc1:P∧Q↔Q∧P				