

Computational Metaphysics 1

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Exercise 4

a)

$$\frac{\frac{[A]}{A} \text{ id}}{A \rightarrow A} \text{ impI} \quad (1)$$

b)

$$\frac{\frac{\frac{[A]}{A} \text{ id}}{B \rightarrow A} \text{ impI}}{A \rightarrow (B \rightarrow A)} \text{ impI} \quad (2)$$

Note that A follows independently of B, so in particular, it follows from B. We can always add arbitrary assumptions, even if our conclusions do not need them.

c)

$$\frac{\frac{\frac{[A]^1}{A} \text{ id}}{B} \text{ mp} \quad \frac{\frac{\frac{[A]^1}{A} \text{ id}}{B \rightarrow C} \text{ mp}}{(A \rightarrow B) \rightarrow (A \rightarrow C)} \text{ impI}_3}{(A \rightarrow (B \rightarrow C)) \rightarrow ((A \rightarrow B) \rightarrow (A \rightarrow C))} \text{ impI}_2 \quad (3)$$

d)

$$\frac{\frac{\frac{[B]^1}{\neg A} \text{ notE}}{B \rightarrow A} \text{ impI}_1}{(\neg A \rightarrow \neg B) \rightarrow (B \rightarrow A)} \text{ impI}_3 \quad (4)$$