THE CALCULUS OF COMPUTATION

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1. Chapter 1

Exercise (1.1).

(a) Assume that there is a falsifying interpretation I.
1. $I \models P \wedge Q \rightarrow P \rightarrow Q$ (assumption)
2. $I \models P \wedge Q$ (by 1 and semantics of $\rightarrow$)
3. $I \not\models P \rightarrow Q$ (by 1 and semantics of $\rightarrow$)
4. $I \models Q$ (by 2 and semantics of $\wedge$)
5. $I \not\models Q$ (by 3 and semantics of $\rightarrow$)
6. $I \models \bot$ (4 and 5 are contradictory)

There is only one branch and it is closed. Thus F is valid.