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PHILOS 12A / DIS 102

GSI: Mathias Boehm

Problem Set #6

Exercise 6.26

The start of the proof is with two premises: A ∨ (B ∧ C) and ¬B ∨ ¬C ∨ D with the goal of getting to A ∨ D. By looking at the conclusion, it can be acknowledged that it is a disjunction, so in order to receive this end result, proof by cases is sufficient.

Beginning the proof is a subproof with the assumption being ¬B. A is reiterated through a subproof. Through another subproof is the assumption (B ∧ C). From there, there is another subproof with the assumption ¬A. Under this subproof, B can be a step, which proves a contradiction with the original assumption. Because of this, ¬¬A is a valid step. After ruling ¬ Elimination, ¬¬A turns into A. The next step would then be A ∨ D by ∨ Intro. This is the end of the ¬B subproof.

Next would be ¬C. It essentially follows the same steps with except of substituting C for B. It would follow the reiteration, elimination, and intros. Because of this, the final steps for the ¬C subproof would be A ∨ D by ∨ Intro.

D is different. D is the assumption, and A ∨ D is valid through ∨ Intro. Because there is a A ∨ D in all three cases, the final conclusion of A ∨ D is proved.