

Translation, Validity and Proof in PL

Translate the following arguments into PL. Then check them for validity using the Truth-Tree Method. Finally, if an argument is valid, construct a proof of the conclusion from the premises.

1. If Blanche goes skiing but Harry stays home, Annie will go rock climbing. If Harry doesn't stay home, Isodore will buy a snowboard. But neither does Annie go rock climbing nor does Blanche go skiing. Therefore Harry doesn't stay home.
2. Edson listens to "Love Supreme" just in case Elwin enjoys Miles Davis. If Elwin doesn't enjoy Miles Davis, then Doris digs Django. But if Doris digs Django, then Linda likes Luciano. Since Linda doesn't like Luciano, but Edson does listen to "Love Supreme," it follows that Elwin enjoys Miles Davis. [\[solution\]](#)
3. If both David listens to Cannonball and Sarah listens to Ellington, then Joyce plays piano if and only if she lives in L.A. If Joyce plays piano, then she doesn't live in L.A. And if Joyce doesn't live in L.A., then she plays piano. Therefore either David doesn't listen to Cannonball or Sarah doesn't listen to Ellington.
4. Oxygen isn't a sufficient condition for fire. Fire is a sufficient condition for chaos. Therefore Oxygen is a necessary condition for chaos.
5. Oxygen isn't a sufficient condition for fire. Fire not being present is a sufficient condition for chaos not being present. Therefore oxygen is a necessary condition for chaos. [\[solution\]](#)
6. If the economy continues to falter, the incumbent will not be reelected. But the economy continues to falter if, and only if, either foreign debt rises substantially, or inflation increases. Inflation does not increase. Therefore, the incumbent will not be reelected.
7. I will find a job when I graduate only if I am well prepared, and I will be well prepared only if I can read and write extremely well and have a good technical education. I will read and write extremely well if and only if I take a lot of Humanities courses, but if I take a lot of Humanities courses, I will not have many technical courses, and if I don't take many technical courses, then I won't have a good technical education. Therefore, I won't find a job when I graduate.* [\[solution\]](#)

*from Bangs L. Tapscott, *Elementary Symbolic Logic* (Englewood Cliffs: Prentice-Hall, 1976).

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