

**Exercise 1.** Using all the methods that you know, i.e.

- (a) Semantic methods of *truth-table* and *indirect proof*
- (b) Syntactic methods of *semantic tableau* and *resolution method*

*prove* that the following formula is a tautology:

$$\models [(p \supset q) \wedge (r \vee p)] \supset (\neg r \supset q)$$

**Exercise 2.** Using all the methods that you know, i.e.

- (a) Semantic methods of *truth-table* and *indirect proof*
- (b) Syntactic methods of *semantic tableau* and *resolution method*

*prove* that the following argument is valid.

If we buy a new computer we will finish the program.  
We'll call a trouble-shooter or buy a new computer.

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If we don't finish the program we'll call a trouble-shooter.