Exercise 1: Jahob Integrated Proof Language
Consider the following class:\footnote{This is a slightly modified version of a test class that comes with the Jahob distribution.}

```java
class Ex11 {
/
   public ghost specvar P :: "obj => bool";
   public ghost specvar Q :: "obj => bool";
/
   public static void test()
   /
      requires "ALL x. P x --> Q x"
      ensures "ALL u v. P u & v=u --> Q v"
   /
   {
      //: pickAny u::obj, v::obj suchThat cond: "P u & v=u";
      //: noteThat p1: "P v" from cond;
      //: noteThat p2: "Q v" from Precondition forSuch u, v;
   }
}
```

(a) Which formula does this class try to prove?
(b) Explain why the proof does not succeed.
(c) Fix the proof.
Exercise 2: Logical operators
From the logical operators false, → and ∀, all other logical operators are definable. For example ¬F can be defined as ¬F := F → false. Find formulas defining

(a) ¬F
(b) true,
(c) F ∨ G
(d) F ∧ G
(e) ∃x F

in terms of false, → and ∀. Prove the validity of these definitions in sequent calculus, e.g. ¬F ⇒ F → false and F → false ⇒ ¬F.