REFUTACIÓN POR RESOLUCIÓN

Mediante refutación por resolución, llegar, si es posible, a la cláusula vacía.

1. (*X)(p(X)->q(X))
   (*X) p(X)
   !(*X) q(X)

2. (*X)(a(X)->b(X))
   (*X)(c(X)->!b(X))
   (+X)(c(X)&d(X))
   !(+X)(d(X)&!a(X))

3. !(+X)(n(X)&j(X))
   !(+X)(!j(X)&l(X))
   !(+X)(!n(X)&d(X))
   !(!(+X)(l(X)&d(X)))

4. (*X) (p(X)->q(X))
   (*X) p(X)
   (+X) q(X)

5. !(+X)(p(X)&d(X))
   (*X)(v(X)->m(X))
   !(+X)(e(X)&m(X))
   (*X)(!p(X)->v(X))
   !(!(+X)(e(X)&d(X)))

6. (*X)(a(X)|j(X))
   (+X)(n(X)&j(X))
   (*X)(!p(X)->d(X))
   (*X)(j(X)->!a(X))
   (*X)(p(X)->!j(X))
   !(+X)(n(X)&d(X))

7. (*X)(a(X)->b(X))
   (*X)(c(X)->!b(X))
   (+X)(c(X)&d(X))
   !(+X)(d(X)&a(X))

8. (*X)(!v(X)->e(X))
   !(+X)(c(X)&d(X))
   (*X)(!c(X)<->v(X))
   (*X)(s(X)->!v(X))
   (*X)(!p(X)->d(X))
   (*X)(p(X)->!e(X))
   !(*X)(s(X)->v(X))

9. !(+X)(t(X)&!e(X))
   !(+X)(v(X)&!pt(X))
   (*X)(p(X)->!pt(X))
   (*X)(e(X)->v(X))
   !(+X)(ap(X)&!t(X))
   !(!(+X)(ap(X)&p(X)))

10. (*X)(d(X)->bs(X))
    (*X)(!v(X)->!d(X))
    (*X)(!v(X)->!ba(X))
    (*X)!(!d(X)&!ba(X))
    (+X)bs(X)
    !(+X)(v(X)&bs(X))

11. (*X)(*Y)(p(X)|q(X,Y)|r(X))
    (*X) !p(X)
    (+X)(*Y)(!r(X)|t(Y))
    (*X) !t(X)
    (+Y)(*X)(!q(X,Y))

12. (*Y)(*X)(!p(X)->q(X,Y)|r(X))
    (*X)!p(X)
    (*X)(r(X)->t(X))
    !(+X)(+Y)(t(X)|q(X,Y))

13. (*X)(p(j,X)->p(a,X))
    p(j,m)
    !(+X) p(a,X)

14. p(c,j)
    h(a,j)
    (*X)(*Y)(p(X,Y)->q(X,Y))
    (*X)(*Y)(h(X,Y)->q(X,Y))
    !(+X)q(X,j)

15. e(a)&e(b)&e(d)
    (*X)(e(X)->g(X,f)|g(X,h))
    (*X)(g(X,f)->!g(X,l))
    (*X)(g(X,h)->g(X,n))
    (*X)(g(a,X)->!g(b,X))
    (*X)(!g(a,X)->g(b,X))
    g(a,l)&g(a,n)
    !(+X)(e(X)&g(X,f)&!g(X,h))