Exercise 25: (Drinker paradox)

$\exists x \forall y(D(x) \wedge D(y))$

Bring in SNF:
$\forall y(D(f) \wedge D(y))$

Build Herbrand expansion:
$E(F) = \{\{D(f)\}, \{D(y)\}\}$

We could not find any more elements of the Herbrand expansion, because f has no arguments. This also implies that there are no more resolutions apart from the one already provided by the Herbrand expansion. Thus the formula is satisfiable.

Exercise 26: (Barber paradox)

Exercise 27: (Runtime)

Exercise 28: (Find the box)

Show that $\square \in Res(F)$