4130 HOMEWORK 1

Due Thursday February 4

(1) Section 1.1.3 Exercise 2b.
(2) Section 1.1.3 Exercise 3b.
(3) Let \( A \) be a set and let \( P(a) \) be a statement about an element of \( a \). We write

\[ \exists ! a \in A P(a) \]

for “there exists a unique \( a \in A \) such that \( P(a) \)”.

(a) Write the statement \( \exists ! a \in A P(a) \) in a form which uses the quantifiers \( \forall \) and \( \exists \),
and no connectives apart from \( \land \), \( \lor \) and \( \lnot \).
(b) Write the negation of the statement from part (a).

(4) Section 1.2.3 Exercise 2.
(5) Section 1.2.3 Exercise 4.
(6) Section 1.2.3 Exercise 7.