

Solutions to Problem Set 2 (6.042J)

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Problem 1

a)

$\text{Members}(p, a, b) ::= \forall z \in p. (z = a \text{ OR } z = b)$

b)

$\text{Pair}(p, a, b) ::= \text{Members}(p, a) \text{ AND } \text{Members}(p, a, b)$

c)

$\text{Second}(p, b) ::= \text{pair}(p, b)$

Problem 2

$x \in \overline{A \cap B}$

iff $x \in \text{NOT}(A \cap B)$

iff $x \in \text{NOT}(A) \text{ AND } x \in \text{NOT}(B)$

iff $x \in \text{NOT}(A \text{ AND } B)$

iff $x \in (\overline{A} \text{ OR } \overline{B})$

iff $x \in \overline{A} \text{ OR } x \in \overline{B}$

iff $x \in \overline{A} \cup \overline{B}$