Representing Sets as Lists

We represent the set \{e_1, e_2, \cdots, e_n\} as the list \( (e_1 \ e_2 \ \cdots \ e_n) \). The elements are arbitrary expressions.

\[
\begin{align*}
\text{(define member (lambda (e s))} \\
&\quad \text{(cond (null? s) #f)} \\
&\quad\quad \text{((equal? e (car s)) #t)} \\
&\quad\quad (#t (member e (cdr s))))
\end{align*}
\]

\[
\begin{align*}
\text{(define subset (lambda (s1 s2))} \\
&\quad \text{(cond (null? s1) #t)} \\
&\quad\quad (#t (and (member (car s1) s2) \\
&\quad\quad\quad (subset (cdr s1) s2))))
\end{align*}
\]

\[
\begin{align*}
\text{(define diff (lambda (a b))} \\
&\quad \text{(cond (null? a) ()}) \\
&\quad\quad ((member (car a) b) (diff (cdr a) b)) \\
&\quad\quad (#t (cons (car a) (diff (cdr a) b))))
\end{align*}
\]