(join) Define function \( \text{join} \) so that it applies to a list of lists and produces their join. For example,
\[
\text{join } [[0; 1; 2]; [\text{nil}]; [[3]]; [4; 5]] = [0; 1; 2; [3]; 4; 5]
\]

§ I'm going to define \( \text{join} \) so it applies to all lists, not just lists of lists. But when applied to a list of lists, it will produce their join, as required. Let \( i \) be an item, and let \( s \) and \( t \) be any strings. Then
\[
\text{join } [\text{nil}] = \text{nil}
\]
\[
\text{join } [i] = i
\]
\[
\text{join } [s; t] = \text{join } [s] ;; \text{join } [t]
\]
Now let's try it in the example.
\[
\text{join } [[0; 1; 2]; [\text{nil}]; [[3]]; [4; 5]]
\]
\[
= \text{join } [[0; 1; 2]] ;; \text{join } [[\text{nil}]] ;; \text{join } [[[3]]] ;; \text{join } [[4; 5]]
\]
\[
= [0; 1; 2] ;; [\text{nil}] ;; [[3]] ;; [4; 5]
\]
\[
= [0; 1; 2; [3]; 4; 5]
\]