Dependent Types

$$\forall (l_1 \, l_2 \, l_3 : \mathsf{List} \, A) \rightarrow ((l_1 \mathbin{++} l_2) \mathbin{++} l_3) \equiv (l_1 \mathbin{++} (l_2 \mathbin{++} l_3))$$

Dependent Types

- Write programs and prove them correct in the same language.

  - Specifications for programs are sets of dependent types.

  - Writing programs with these dependent types is equivalent to proving each property in the specification.

  - Type checking these programs machine checks your proofs.