Polymorphism

- Consider identity function $\mathsf{I} : \alpha \to \alpha$
  - type variable α ranges over sets A
  - identity set-function on A:

$$(|\mathsf{I}|\ A) \ = \ \{\langle x, y\rangle \in A \times A \ \mid \ x = y\}$$

  - type variables represented by set variables
- Compare with the identity operator $\hat{\mathsf{I}}$ on sets
  - $\hat{\mathsf{I}} \ = \ \lambda x : V.\ x$
  - $\hat{\mathsf{I}} : V \to V$
  - $x \in X \ \Rightarrow \ \hat{\mathsf{I}}\ x = (|\mathsf{I}|\ X) \diamond x$
- $\hat{\mathsf{I}}$ doesn't need explicit parameter
  - 'polymorphic' operators like $\hat{\mathsf{I}}$ convenient
  - use function application rather than $\diamond$
  - many examples from Isabelle/ZF
  - can parameters be *uniformly* eliminated?