

Formal Definition for a function LI which defines the leftmost-innermost redex of a lambda term

1. $LI\ V = \perp$
2. $LI\ \lambda V.T = LI\ T$; if $LI\ T \neq \perp$
3. $LI\ \lambda V1.T = \perp$;if $LI\ T = \perp$
4. $LI\ \lambda V.(T\ V) = LI\ T$ if $V \notin occurs_free_in(T)$
5. $LI\ \lambda V.(V\ T) = LI\ T$; if $LI\ T \neq \perp$
6. $LI\ (T1\ T2) = LI\ T1$; if $LI\ T1 \neq \perp$
7. $LI\ (T1\ T2) = LI\ T2$; if $LI\ T1 = \perp$ && $LI\ T2 \neq \perp$
8. $LI\ (T1\ T2) = \perp$; if $LI\ T1 = \perp$ and if $LI\ T2 = \perp$
9. $LI\ LV.T1\ T2 = LI\ T1$ if $LI\ T1 \neq \perp$
10. $LI\ LV.T1\ T2 = \perp$ if $LI\ T1 = \perp$ and if $LI\ T2 = \perp$