

$$\frac{\mathcal{E}_3, \frac{\mathcal{E}_2 p \vdash_{\Delta} \langle x, \sigma_2 \rangle \rightarrow_e \langle 2, \sigma_2 \rangle}{p \vdash_{\Delta} \langle x=y, \sigma_2 \rangle \rightarrow_e \langle 2=y, \sigma_2 \rangle}}{p \vdash_{\Delta} \langle x=y, \sigma_2 \rangle \rightarrow_e \langle 2=y, \sigma_2 \rangle}$$

$p(x) = l_x$   
 $\sigma_2(l_x) = 2$

$$\frac{\mathcal{E}_6 \frac{\mathcal{E}_2 p \vdash_{\Delta} \langle y, \sigma_2 \rangle \rightarrow_e \langle 2, \sigma_2 \rangle}{p \vdash_{\Delta} \langle 2=y, \sigma_2 \rangle \rightarrow_e \langle 2=2, \sigma_2 \rangle}}{p \vdash_{\Delta} \langle 2=y, \sigma_2 \rangle \rightarrow_e \langle 2=2, \sigma_2 \rangle}$$

$p(y) = 2$

$$\frac{\mathcal{E}_5 p \vdash_{\Delta} \langle 2=2, \sigma_2 \rangle \rightarrow_e \langle \text{true}, \sigma_2 \rangle}{p \vdash_{\Delta} \langle x=y, \sigma_2 \rangle \rightarrow_e^* \langle \text{true}, \sigma_2 \rangle}$$

1  $\frac{\mathcal{C}_3 \mathcal{C}_5}{p \vdash_{\Delta} \langle \text{if } x=y \text{ then } x:=5 \text{ else } x:=6, \sigma_2 \rangle \rightarrow_c \langle x:=5, \sigma_2 \rangle}$

2  $\frac{\mathcal{C}_2 p \vdash_{\Delta} \langle x:=5, \sigma_2 \rangle \rightarrow_c \sigma_2[l_x \leftarrow 5]}{p(x) = l_x}$