$$\cfrac{[x \mapsto t_x, f \mapsto t_x \to int] \vdash 1 : \text{int}}{} (p1) \qquad \cfrac{\cfrac{\rho_1(f) = \forall \alpha, \alpha \to \text{int}}{\rho_1 \vdash \text{f} : \alpha? \to int} (p3) \quad \cfrac{\rho_1(f) = \forall \alpha, \alpha \to \text{int}}{\rho_1 \vdash \text{f} : ????} (p3)}{\rho_1[f \mapsto \forall \alpha, t_x \to int] \vdash \text{f f} : \text{int}} (p9)}{[] \vdash \text{let f x} = 1 \text{ in f f end} : \text{int}} (p8)$$