

$$\begin{array}{c}
 \textcircled{3} \frac{\Delta y : t_2 \vdash y : t_3 * t_4}{\Delta y : t_2 \vdash \text{fst}(y) : t_3} \quad \textcircled{5} \frac{\Delta y : t_6 \vdash y : t_8 * t_7}{\Delta y : t_6 \vdash \text{snd}(y) : t_7} \quad \textcircled{8} \frac{\Gamma \vdash y : t_1 \quad \Gamma \vdash x : t_9}{\Gamma \vdash t : n \rightarrow n \rightarrow n} \quad \textcircled{9} \frac{\Gamma \vdash g : t_1 \quad \Gamma \vdash x : t_9}{\Gamma \vdash g x : n} \quad \textcircled{11} \frac{\Gamma \vdash g : t_1 \quad \Gamma \vdash x : t_9}{\Gamma \vdash g x : n} \quad \textcircled{12} \frac{\Gamma \vdash g : t_1 \quad \Gamma \vdash x : t_9}{\Gamma \vdash g x : n} \\
 \textcircled{2} \frac{\Delta y : t_2 \vdash \text{fst}(y) : t_3}{\emptyset \vdash \text{fst } n y . \text{fst } x y : t_1} \quad \textcircled{4} \frac{\Delta y : t_6 \vdash \text{snd}(y) : t_7}{\emptyset \vdash \text{fst } n y . \text{snd } y : t_5} \quad \Gamma \vdash t : n \rightarrow n \rightarrow n \quad \Gamma \vdash \text{fst } x : n \quad \Gamma \vdash \text{snd } x : n \\
 \textcircled{1} \frac{\emptyset \vdash \text{fst } n y . \text{fst } x y : t_1 \quad \emptyset \vdash \text{fst } n y . \text{snd } y : t_5}{\emptyset \vdash \text{let } f = \text{fst } n y . \text{fst } x y \text{ in let } g = \text{fst } n y . \text{snd } y \text{ in } \text{fst } x . f x + g x : t_0}
 \end{array}$$

$$\begin{array}{ll}
 \textcircled{1} t_0 \sim t_9 \rightarrow t_{10} \checkmark & \textcircled{3} t_2 \sim t_3 * t_4 \checkmark \\
 \textcircled{2} t_1 \sim t_2 \rightarrow t_3 \checkmark & \textcircled{5} t_6 \sim t_8 * t_7 \checkmark \\
 \textcircled{4} t_5 \sim t_6 \rightarrow t_7 \checkmark & \textcircled{6} n \rightarrow n \rightarrow n \sim n \rightarrow n \rightarrow t_{10} \checkmark \\
 \textcircled{7} t_{11} \sim t_9 \rightarrow n \checkmark & \textcircled{8} C_1 \supset t_{11} \checkmark \\
 \textcircled{10} t_{12} \sim t_9 \rightarrow n \checkmark & \textcircled{11} C_2 \supset t_{12} \checkmark
 \end{array}$$

$$\begin{array}{l}
 \textcircled{2'} t_1 \sim (t_3 * t_4) \rightarrow t_3 . t_{10} \supset C_1 = \forall \alpha_1 . \alpha_2 . (\alpha_1 * \alpha_2) \rightarrow \alpha_1 \\
 \textcircled{4'} t_5 \sim (t_8 * t_7) \rightarrow t_7 . t_{10} \supset C_2 = \forall \beta_1 . \beta_2 . (\beta_1 * \beta_2) \rightarrow \beta_2 \\
 \textcircled{5'} t_{10} \sim n \checkmark \\
 \textcircled{1'} t_0 \sim t_9 \rightarrow n \\
 \textcircled{8'} t_{11} \sim (n * t_{20}) \rightarrow n \checkmark \\
 \textcircled{11'} t_{12} \sim (t_{21} * n) \rightarrow n \checkmark \\
 \textcircled{7+10'} t_9 \sim n * n \\
 \textcircled{1''} t_0 \sim (n * n) \rightarrow n
 \end{array}$$