(b)

$$\frac{[x\leftarrow 2][\rho_3] \vdash d_4 \rightarrow_d^* \rho_4}{[x\leftarrow 2] \vdash \rho_3 ; d_4 \rightarrow_d \rho_3 ; \rho_4} \equiv \frac{[x\leftarrow 2, y\leftarrow 3] \vdash d_4 \rightarrow_d^* \rho_4}{[x\leftarrow 2] \vdash [y\leftarrow 3] ; d_4 \rightarrow_d [y\leftarrow 3] ; \rho_4}\ \mathcal{D}_5$$

$$\frac{\dfrac{[x\leftarrow 2, y\leftarrow 3] \vdash y+x \rightarrow_e^* 5}{[x\leftarrow 2, y\leftarrow 3] \vdash \text{const } x\text{:int}=y+x \rightarrow_d [z\leftarrow 5]}\ \mathcal{D}_3}{[x\leftarrow 2] \vdash [y\leftarrow 3]; \text{const } z\text{:int}=y+x \rightarrow_d [y\leftarrow 3]; [z\leftarrow 5]}\ \mathcal{D}_5$$

(c)

$$[x\leftarrow 2] \vdash \rho_3 ; \rho_4 \rightarrow_d \rho_3 [\rho_4]\ \ \mathcal{D}_6$$