

②

$$\frac{[x \leftarrow 2] \vdash d_3 \xrightarrow{*}_d p_3}{[x \leftarrow 2] \vdash d_3; d_4 \xrightarrow{d} p_3; d_4} \mathcal{D}_4$$

$$\frac{[x \leftarrow 2] \vdash x+1 \xrightarrow{e} 3}{[x \leftarrow 2] \vdash \text{const } y:\text{int}=x+1 \xrightarrow{d} [y \leftarrow 3]} \mathcal{D}_3$$

$$\frac{[x \leftarrow 2] \vdash \text{const } y:\text{int}=x+1 \xrightarrow{d} [y \leftarrow 3]}{[x \leftarrow 2] \vdash \text{const } y:\text{int}=x+1; \text{const } z:\text{int}=y+x \xrightarrow{d} [y \leftarrow 3]; \text{const } z:\text{int}=y+x} \mathcal{D}_4$$

⑥

$$\frac{[x \leftarrow 2][p_3] \vdash d_4 \xrightarrow{*}_d p_4}{[x \leftarrow 2] \vdash p_3; d_4 \xrightarrow{d} p_3; p_4} \mathcal{D}_5$$

③

$$[x \leftarrow 2] \vdash p_3; p_4 \xrightarrow{d} p_3[p_4] \quad \mathcal{D}_6$$