

Boolean and Numbers Evaluation Semantics

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$$\begin{array}{c}
 \text{E-VAL} \\
 \frac{}{v \Downarrow v} \\
 \\
 \text{E-IFTRUE} \qquad \frac{t_1 \Downarrow \text{true} \quad t_2 \Downarrow v}{\text{if } t_1 \text{ then } t_2 \text{ else } t_3 \Downarrow v} \qquad \text{E-IFFALSE} \qquad \frac{t_1 \Downarrow \text{false} \quad t_3 \Downarrow v}{\text{if } t_1 \text{ then } t_2 \text{ else } t_3 \Downarrow v} \\
 \\
 \text{E-SUCC} \qquad \frac{t_1 \Downarrow n}{\text{succ } t_1 \Downarrow \text{succ } n} \qquad \text{E-PREDZERO} \qquad \frac{t_1 \Downarrow 0}{\text{pred } t_1 \Downarrow 0} \qquad \text{E-PREDSUCC} \qquad \frac{t_1 \Downarrow \text{succ } n}{\text{pred } t_1 \Downarrow n} \qquad \text{E-ISZEROZERO} \qquad \frac{t_1 \Downarrow 0}{\text{iszero } t_1 \Downarrow \text{true}} \\
 \\
 \text{E-ISZEROSUCC} \qquad \frac{t_1 \Downarrow \text{succ } n}{\text{iszero } t_1 \Downarrow \text{false}}
 \end{array}$$