$$\overline{a|b} \xrightarrow[\text{stet}]{\dot{\text{ገ}}} \mathbb{R}$$

$$\cup$$

$$\underline{a|b} \xrightarrow[\dot{\text{ገ}}]{\text{diff}} \mathbb{R}$$

$$\begin{cases} {}^{a}\text{ገ} = 0 = {}^{a}\text{ተ} \\ \bigwedge\limits_{a<x<b} {}^{x}\underline{\text{ተ}} \neq 0 \end{cases} \Longrightarrow \lim_{x \searrow a} {}^{x}\text{ገ} / {}^{x}\text{ተ} = \lim_{x \searrow a} {}^{x}\underline{\text{ገ}} / {}^{x}\underline{\text{ተ}} \text{ falls ex}$$

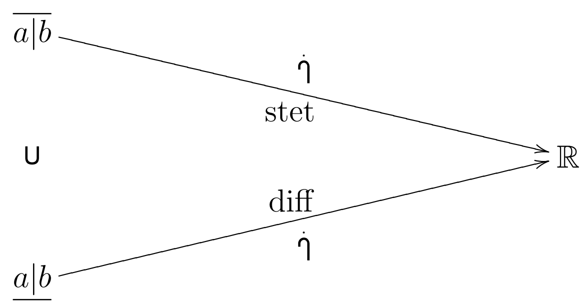
$$\bigwedge_{a<x\leqslant b} {}^{x}\text{ተ} \neq 0$$

$$\lightning\ {}^{x}\text{ተ} = 0 = {}^{a}\text{ተ} \underset{\text{ROL}}{\Longrightarrow} \bigvee_{a<y<x} {}^{y}\underline{\text{ተ}} = 0\ \lightning$$

$$\bigwedge_{a<x\leqslant b} \overset{2\text{ MWS}}{\Longrightarrow} \bigvee_{a<\bar{x}<x\leqslant b} {}^{\bar{x}}\underline{\text{ገ}}\ {}^{x}\text{ተ} = {}^{\bar{x}}\underline{\text{ገ}}\ \overbrace{{}^{x}\text{ተ} - \underbrace{{}^{a}\text{ተ}}_{=0}} = {}^{\bar{x}}\underline{\text{ተ}}\ \overbrace{{}^{x}\text{ገ} - \underbrace{{}^{a}\text{ገ}}_{=0}} = {}^{\bar{x}}\underline{\text{ተ}}\ {}^{x}\text{ገ} \Longrightarrow {}^{x}\text{ገ} / {}^{x}\text{ተ} = {}^{\bar{x}}\underline{\text{ገ}} / {}^{\bar{x}}\underline{\text{ተ}}$$

$$\bigwedge_{\varepsilon>0} \bigvee_{0<\delta<b-a} a<y\leqslant a+\delta \curvearrowright \left\lceil {}^{y}\underline{\text{ገ}} / {}^{y}\underline{\text{ተ}} - L \right\rceil \leqslant \varepsilon$$

$$a<x\leqslant a+\delta \Longrightarrow a<\bar{x}<x\leqslant a+\delta \Longrightarrow \left\lceil {}^{x}\text{ገ} / {}^{x}\text{ተ} - L \right\rceil = \left\lceil {}^{\bar{x}}\underline{\text{ገ}} / {}^{\bar{x}}\underline{\text{ተ}} - L \right\rceil \leqslant \varepsilon$$



$$\begin{cases} {}^b\daleth = 0 = {}^b\gimel \\ \bigwedge\limits_{a<x<b} {}^x\underline{\gimel} \neq 0 \end{cases} \Longrightarrow \lim_{x\nearrow b} {}^x\daleth / {}^x\gimel = \lim_{x\nearrow b} {}^x\underline{\daleth} / {}^x\underline{\gimel} \text{ falls ex}$$

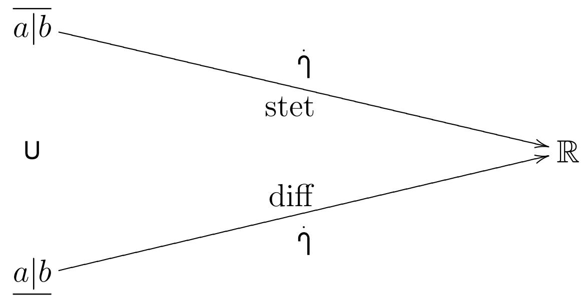
$$\bigwedge_{a\leqslant x<b} {}^x\gimel \neq 0$$

$$\lightning\ {}^x\gimel = 0 = {}^b\gimel \underset{\text{ROL}}{\Longrightarrow} \bigvee_{x<y<b} {}^y\acute{\underline{\daleth}} = 0\ \lightning$$

$$\bigwedge_{a\leqslant x<b} \overset{1}{\underset{\text{MWS}}{\Longrightarrow}} \bigvee_{a\leqslant x<\bar{x}<b} {}^{\bar{x}}\underline{\daleth}\ {}^x\acute{\daleth} = {}^{\bar{x}}\underline{\daleth}\overbrace{{}^x\acute{\daleth} - \underbrace{{}^b\acute{\daleth}}_{=0}} = {}^{\bar{x}}\acute{\underline{\daleth}}\overbrace{{}^x\daleth - \underbrace{{}^b\daleth}_{=0}} = {}^{\bar{x}}\acute{\underline{\daleth}}\ {}^x\daleth \Longrightarrow {}^x\daleth / {}^x\acute{\daleth} = {}^{\bar{x}}\underline{\daleth} / {}^{\bar{x}}\acute{\underline{\daleth}}$$

$$\bigwedge_{\varepsilon>0}\ \bigvee_{0<\delta\leqslant b-a} b-\delta\leqslant y<b \curvearrowright \left\lceil {}^y\underline{\daleth}/{}^y\acute{\underline{\daleth}} - L \right\rceil \leqslant \varepsilon$$

$$b-\delta\leqslant x<b \Longrightarrow b-\delta\leqslant x<\bar{x}<b \Longrightarrow \left\lceil {}^x\daleth/{}^x\acute{\daleth} - L \right\rceil = \left\lceil {}^{\bar{x}}\underline{\daleth}/{}^{\bar{x}}\acute{\underline{\daleth}} - L \right\rceil \leqslant \varepsilon$$



$$o \in \underline{a|b}$$

$$\begin{cases} {}^{o}\daleth = 0 = {}^{o}\daleth' \\ \bigwedge\limits_{x \neq o} {}^{x}\underline{\daleth}' \neq 0 \end{cases} \implies \lim_{x \rightsquigarrow o} {}^{x}\daleth / {}^{x}\daleth' = \lim_{x \rightsquigarrow o} {}^{x}\underline{\daleth} / {}^{x}\underline{\daleth}' \text{ falls ex}$$

$$\bigwedge_{o \neq x \in \overline{a|b}} {}^{x}\daleth' \neq 0$$

$$\lightning \; {}^{x}\daleth' = 0 = {}^{o}\daleth' \underset{\text{ROL}}{\implies} \bigvee_{y \in \underline{o|x}} {}^{y}\underline{\daleth}' = 0 \; \lightning$$

$$\bigwedge_{o \neq x \in \overline{a|b}} \overset{1}{\underset{\text{MWS}}{\implies}} \bigvee_{\bar{x} \in \underline{o|x} \subset \underline{a|b}} {}^{\bar{x}}\underline{\daleth}\,{}^{x}\daleth' = {}^{\bar{x}}\underline{\daleth}\underbrace{{}^{x}\daleth' - {}^{o}\underset{=0}{\daleth'}} = {}^{\bar{x}}\underline{\daleth}'\underbrace{{}^{x}\daleth - {}^{o}\underset{=0}{\daleth}} = {}^{\bar{x}}\underline{\daleth}'\,{}^{x}\daleth \implies {}^{x}\daleth / {}^{x}\daleth' = {}^{\bar{x}}\underline{\daleth} / {}^{\bar{x}}\underline{\daleth}'$$

$$\bigwedge_{\varepsilon > 0} \bigvee_{\delta > 0} \overline{y - o} \leqslant \delta \curvearrowright \overline{{}^{y}\underline{\daleth} / {}^{y}\underline{\daleth}' - L} \leqslant \varepsilon$$

$$\overline{x - o} \leqslant \delta \implies \overline{\bar{x} - o} \leqslant \overline{x - o} \leqslant \delta \implies \overline{{}^{x}\daleth / {}^{x}\daleth' - L} = \overline{{}^{\bar{x}}\underline{\daleth} / {}^{\bar{x}}\underline{\daleth}' - L} \leqslant \varepsilon$$

$$\begin{array}{ccc} a+\mathbb{R}_+ & \xrightarrow[\text{stet}]{\dot{\daleth}} & \mathbb{R} \\ \cup & & \\ a+\mathbb{R}_> & \xrightarrow[\dot{\daleth}]{\text{diff}} & \mathbb{R} \end{array}$$

$$\begin{cases} {}^{b}\daleth = 0 = {}^{b}\daleth' \\ \bigwedge\limits_{a<x<\infty} {}^{x}\underline{\daleth}' \neq 0 \end{cases} \Rightarrow \lim_{x\nearrow\infty} {}^{x}\daleth / {}^{x}\daleth' = \lim_{x\nearrow\infty} {}^{x}\underline{\daleth} / {}^{x}\underline{\daleth}' \text{ falls ex}$$

$$\begin{array}{ccc} \mathbb{R}_\geqslant & \xrightarrow[\text{stet}]{\dot{\gimel}} & \mathbb{R} \\ \cup & & \\ \mathbb{R}_> & \xrightarrow[\dot{\gimel}]{\text{diff}} & \mathbb{R} \end{array}$$

$${}^{t}\dot{\gimel} = {}^{a+1/t}\dot{\daleth} \Rightarrow {}^{t}\underline{\dot{\gimel}} = {}^{a+1/t}\underline{\dot{\daleth}} \left(-1/t^2\right)$$

$$\lim_{x\nearrow\infty} {}^{x}\daleth / {}^{x}\daleth' = \lim_{t\searrow 0} {}^{t}\gimel / {}^{t}\gimel' \underset{\text{HOP}}{=} \lim_{t\searrow 0} {}^{t}\underline{\gimel} / {}^{t}\underline{\gimel}' = \lim_{t\searrow 0} {}^{a+1/t}\underline{\daleth} / {}^{a+1/t}\underline{\daleth}' = \lim_{x\nearrow\infty} {}^{x}\underline{\daleth} / {}^{x}\underline{\daleth}'$$