$$\mathfrak{f} \text{ diff at o } \Leftrightarrow \bigvee {}^{o}\underline{\mathfrak{f}} \in {}^{\acute{\mathsf{L}}}\triangle \mathsf{L}: \quad \frac{{}^{o+\mathsf{L}}\mathfrak{f} - {}^{o}\mathfrak{f} - \mathsf{L}\,{}^{o}\underline{\mathfrak{f}}}{\lVert \mathsf{L} \rVert} \rightsquigarrow 0$$

$$\bigwedge_{\varepsilon}^{>0} \bigvee_{\delta}^{>0} \lVert \mathsf{L} \rVert \leqslant \delta \curvearrowright o + \mathsf{L} \in \hbar \wedge \lVert {}^{o+\mathsf{L}}\mathfrak{f} - {}^{o}\mathfrak{f} - \mathsf{L}\,{}^{o}\underline{\mathfrak{f}} \rVert \leqslant \lVert \mathsf{L} \rVert \varepsilon$$

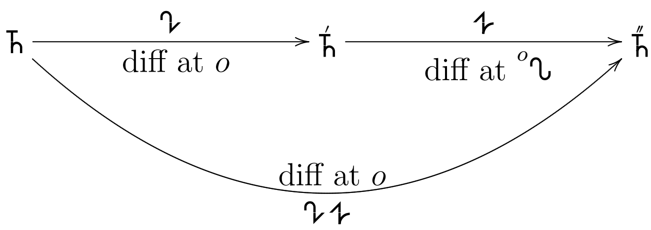
$${}^{\mathsf{L}}_{o}\mathfrak{f} = \frac{{}^{o+\mathsf{L}}\mathfrak{f} - {}^{o}\mathfrak{f} - \mathsf{L}\,{}^{o}\underline{\mathfrak{f}}}{\lVert \mathsf{L} \rVert}$$

$${}^{\mathsf{h}}_{o}\mathfrak{f} = \frac{{}^{\mathsf{h}}\mathfrak{f} - {}^{o}\mathfrak{f} - \underbrace{\mathsf{h} - o}\,{}^{o}\underline{\mathfrak{f}}}{\lVert \mathsf{h} - o \rVert}$$

$$\mathfrak{f} \text{ diff at o } \Rightarrow \mathfrak{f} \text{ stet at o}$$

$${}^{\mathsf{h}}\mathfrak{f} - {}^{o}\mathfrak{f} = \underbrace{\mathsf{h} - o}_{\rightsquigarrow 0}\,{}^{o}\underline{\mathfrak{f}} + \overbrace{\lVert \mathsf{h} - o \rVert}^{\rightsquigarrow 0}\,\underbrace{{}^{\mathsf{h}}_{o}\mathfrak{f}}_{\rightsquigarrow 0} \rightsquigarrow 0$$

$$\lVert {}^{o+\mathsf{L}}\mathfrak{f} - {}^{o}\mathfrak{f} \rVert \leqslant \lVert \mathsf{L} \rVert \underbrace{\lVert {}^{o}\underline{\mathfrak{f}} \rVert + \varepsilon}$$



$${}^{o}\underline{fg} = {}^{o}\underline{f}\,{}^{{}^{o}f}\underline{g}$$

$${}^{x}f - {}^{o}f = \underbrace{x-o}\,{}^{o}\underline{f} + \overline{x-o}\,{}^{x}_{o}f$$

$${}^{y}g - {}^{{}^{o}f}g = \underbrace{y-{}^{o}f}\,{}^{{}^{o}f}\underline{g} + \overline{y-{}^{o}f}\,{}^{y}_{{}^{o}f}g$$

$${}^{{}^{x}f}g - {}^{{}^{o}f}g = \underbrace{{}^{x}f-{}^{o}f}\,{}^{{}^{o}f}\underline{g} + \overline{{}^{x}f-{}^{o}f}\,{}^{{}^{x}f}_{{}^{o}f}g$$

$$= \overbrace{\underbrace{x-o}\,{}^{o}\underline{f} + \overline{x-o}\,{}^{x}_{o}f}\,{}^{{}^{o}f}\underline{g} + \overline{{}^{x}f-{}^{o}f}\,{}^{{}^{x}f}_{{}^{o}f}g$$

$$= \underbrace{x-o}\,{}^{o}\underline{f}\,{}^{{}^{o}f}\underline{g} + \overline{x-o}\,{}^{x}_{o}f\,{}^{{}^{o}f}\underline{g} + \overline{{}^{x}f-{}^{o}f}\,{}^{{}^{x}f}_{{}^{o}f}g$$

$$\Rightarrow \overline{x-o}\,{}^{x}_{o}\underbrace{fg} = \overline{x-o}\,{}^{x}_{o}f\,{}^{{}^{o}f}\underline{g} + \overline{{}^{x}f-{}^{o}f}\,{}^{{}^{x}f}_{{}^{o}f}g = \overline{x-o}\,{}^{x}_{o}f\,{}^{{}^{o}f}\underline{g} + \overline{\underbrace{x-o}\,{}^{o}\underline{f} + \overline{x-o}\,{}^{x}_{o}f}\,{}^{{}^{x}f}_{{}^{o}f}g$$

$$\Rightarrow {}^{x}_{o}\underbrace{fg} = {}^{x}_{o}f\,{}^{{}^{o}f}\underline{g} + \overline{\frac{x-o}{\overline{x-o}}\,{}^{o}\underline{f} + {}^{x}_{o}f}\,{}^{{}^{x}f}_{{}^{o}f}g$$

$$\overline{\mathsf{L}} \leqslant \left(1 \curlywedge {}^{f}_{o}(\varepsilon)\right) \curlywedge \frac{{}^{g}_{{}^{o}f}(\varepsilon)}{1+\overline{{}^{o}\underline{f}}}$$

$$\Rightarrow \overline{{}^{o+\mathsf{L}}f - {}^{o}f} \leqslant \overline{\mathsf{L}}\,\underbrace{1\curlywedge\varepsilon + \overline{{}^{o}\underline{f}}} \leqslant \overline{\mathsf{L}}\,\underbrace{1+\overline{{}^{o}\underline{f}}} \leqslant {}^{g}_{{}^{o}f}(\varepsilon)$$

$$\Rightarrow \overline{{}^{o+\mathsf{L}}\overbrace{fg} - {}^{o}\overbrace{fg} - \mathsf{L}\,{}^{o}\underline{f}\,{}^{{}^{o}f}\underline{g}} = \overline{{}^{{}^{o+\mathsf{L}}f}g - {}^{{}^{o}f}g - \mathsf{L}\,{}^{o}\underline{f}\,{}^{{}^{o}f}\underline{g}}$$

$$\leqslant \overline{{}^{{}^{o+\mathsf{L}}f}g - {}^{{}^{o}f}g - \underbrace{{}^{o+\mathsf{L}}f - {}^{o}f}\,{}^{{}^{o}f}\underline{g}} + \overline{\underbrace{{}^{o+\mathsf{L}}f-{}^{o}f}\,{}^{{}^{o}f}\underline{g} - \mathsf{L}\,{}^{o}\underline{f}\,{}^{{}^{o}f}\underline{g}}$$

$$\leqslant \varepsilon\,\overline{{}^{o+\mathsf{L}}f-{}^{o}f} + \overline{{}^{o+\mathsf{L}}f - {}^{o}f - \mathsf{L}\,{}^{o}\underline{f}}\,\overline{{}^{{}^{o}f}\underline{g}} \leqslant \varepsilon\,\underbrace{1+\overline{{}^{o}\underline{f}}}\,\overline{\mathsf{L}} + \varepsilon\,\overline{\mathsf{L}}\,\overline{{}^{{}^{o}f}\underline{g}} = \varepsilon\,\underbrace{1+\overline{{}^{o}\underline{f}}+\overline{{}^{{}^{o}f}\underline{g}}}\,\overline{\mathsf{L}}$$