

(195)

$$\lim_{x \rightarrow 0} [\log(1+5x)]^{\operatorname{arctg} 3x} =$$

$$= \lim_{x \rightarrow 0} e^{\operatorname{arctg} 3x \log \log(1+5x)}$$

$$= \lim_{x \rightarrow 0} e^{\operatorname{arctg} 3x \log(1+5x) \frac{\log \log(1+5x)}{\log(1+5x)}}$$

$$= e^{0 \cdot 0 \cdot 0} = 1$$

$$= \lim_{x \rightarrow 0} e^{\frac{\operatorname{arctg} 3x}{3x} \cdot \frac{5x}{\log(1+5x)} \cdot \frac{5}{3} \log(1+5x) \log \log(1+5x)}$$

$$= e^{1 \cdot 1 \cdot \frac{5}{3} \cdot 0} = e^0 = 1$$