BY GIMUSI 16/01/17

$$\lim_{x \to 0} x \cdot tg\left(xa + arctg\left(\frac{b}{x}\right)\right)$$

$b = 0 \rightarrow x \, TAN(x a + ARCTAN(b/x)) = x \, TAN(x a) \rightarrow 0$

$b \neq 0$

$$x \, TAN(x a + ARCTAN(b/x)) = x \, TAN\left(x a \pm \frac{\pi}{2} - ARCTAN(x/b)\right) =$$

$$= x \, \frac{SIN\left(\pm \frac{\pi}{2} + x a - ARCTAN(x/b)\right)}{COS\left(\pm \frac{\pi}{2} + x a - ARCTAN(x/b)\right)} =$$

$$= x \, \frac{\pm COS(x a - ARCTAN(x/b))}{\mp SIN(x a - ARCTAN(x/b))} =$$

$$= \frac{x}{x a - ARCTAN(x/b)} \cdot \frac{-(x a - ARCTAN(x/b))}{SIN(x a - ARCTAN(x/b))} \cdot COS(\dots) =$$

$\rightarrow b/(ab-1)$ $\quad ab \neq 1$ $\quad \rightarrow -1$ $\quad \rightarrow 1$

$$= \frac{b}{ab - \underbrace{\frac{ARCTAN(x/b)}{x/b}}_{\rightarrow 1}} \cdot \frac{-(x a - ARCTAN(x/b))}{SIN(x a - ARCTAN(x/b))} \cdot COS(\dots) \rightarrow$$

$$\rightarrow \frac{b}{1 - ab} \qquad ab \neq 1$$