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$$\lim_{x\to 0} \frac{\log(3^x - 1 + 2\,\mathrm{sen}^2 x) + 3^x \log \mathrm{arctg}\, x}{\log(3\,\mathrm{sen}\,x + 1 - \cos x) + (\mathrm{arctg}\, 2^x)\log x} =$$

$$= \lim_{x\to 0} \frac{\log\left(\frac{3^x-1}{x} + \frac{2\,\mathrm{sen}^2 x}{x}\right) + \log x + 3^x \log \frac{\mathrm{arctg}\, x}{x} + 3^x \log x}{\log\left(3\frac{\mathrm{sen}\,x}{x} + \frac{1-\cos x}{x}\right) + \log x + (\mathrm{arctg}\, 2^x)\log x}$$

$$= \lim_{x\to 0} \frac{\frac{\log\left(\frac{3^x-1}{x} + \frac{2\,\mathrm{sen}^2 x}{x}\right)}{\log x} + 1 + 3^x \frac{\log \frac{\mathrm{arctg}\, x}{x}}{\log x} + 3^x}{\frac{\log\left(3\frac{\mathrm{sen}\,x}{x} + \frac{1-\cos x}{x}\right)}{\log x} + 1 + \mathrm{arctg}\, 2^x}$$

$$= \frac{\frac{\log(\log 3 + 0)}{\infty} + 1 + 3^0 \frac{\log}{\infty} + 3^0}{\frac{\log(3+0)}{\infty} + 1 + \mathrm{arctg}\, 2^0} =$$

$$= \frac{1+1}{1+\mathrm{arctg}\, 1} = \frac{2}{1+\frac{\pi}{4}} = \frac{8}{4+\pi}$$