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$$\lim_{x\to+\infty} \frac{x^3+2x^2+\operatorname{tgh} x}{\operatorname{sen}^2 x + x^2 + 1} \left(5^{\frac{x+1}{x^2+3}} - 3^{\frac{x-2}{x^2+4}} \right) =$$

$$= \lim_{x\to+\infty} \frac{x^3\left(1+\frac{2}{x}+\frac{\operatorname{tgh} x}{x^3}\right)}{x^2\left(1+\frac{\operatorname{sen}^2 x}{x^2}+\frac{1}{x^2}\right)} \left[\left(5^{\frac{x+1}{x^2+3}} - 1 \right) - \left(3^{\frac{x-2}{x^2+4}} - 1 \right) \right] =$$

$$= \frac{1}{2} \left[\lim_{x\to+\infty} \left[x \cdot \frac{x+1}{x^2+3} \cdot \frac{5^{\frac{x+1}{x^2+3}} - 1}{\frac{x+1}{x^2+3}} - x \cdot \frac{x-2}{x^2+4} \cdot \frac{3^{\frac{x-2}{x^2+4}} - 1}{\frac{x-2}{x^2+4}} \right] \right] =$$

$$= \frac{1}{2} \left(\log 5 - \log 3 \right) = \frac{\log 5/3}{2}$$