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

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

$$\overset{*}{=} \lim_{x\to+\infty} e^{\frac{x\sqrt{1+\frac{3}{x}+\frac{4}{x^2}}}{5x^2+2x+3}\log_3 3^x \log 3} \cdot$$

$$\cdot e^{\frac{\sqrt{x^2+3x+4}}{5x^2+2x+3}\log\left[1+\frac{x^4}{3^x}+\frac{\operatorname{sen}^4 x}{3^x}+\frac{2}{3^x}\right]} =$$

$$= e^{\frac{1}{5}\log 3}\, e^{0} = e^{\log\sqrt[5]{3}} = \sqrt[5]{3}$$

$$\lim_{x\to-\infty}\left(e^{-x}+\operatorname{arctg}\right.$$

$$\frac{2x^3-5x^2+}{x^4+2\cos x}$$

$$= \lim_{x\to-\infty} e$$

$$\cdot \frac{2x^4-}{x^4+}$$

$$= \lim_{x\to-\infty} e$$

$$= e^{-2}\, e^{0}$$