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$$\lim_{x \rightarrow +\infty} \left(\frac{x^2+2}{x+3\sin x} \right)^{\frac{x^3+2x^2+\arctan x}{4x^5+3x^4+\log x}}$$

$$= \lim_{x \rightarrow +\infty} e^{\frac{x^3+2x^2+\arctan x}{4x^5-3x^4+\log x} \log \frac{x^2+2}{x+3\sin x}}$$

$$= \lim_{x \rightarrow +\infty} e^{\frac{x^3+2x^2+\arctan x}{4x^5-3x^4+\log x} \log \left(\frac{x^2}{x} \left(1 + \frac{2}{x^2} \right) \frac{1}{1 + \frac{3\sin x}{x}} \right)}$$

$$= \lim_{x \rightarrow +\infty} e^{\frac{(x^3+2x^2+\arctan x)x^2}{4x^5-3x^4+\log x} \frac{\log x}{x^2}}$$

$$\frac{x^3+2x^2+\arctan x}{4x^5-3x^4+\log x} \log \left(\frac{1 + \frac{2}{x^2}}{1 + \frac{3\sin x}{x}} \right)$$

$$= e^{\frac{1}{4} \cdot 0 \cdot 0} = 1$$

1) Limit - Reprodica
2) Limit di e

$$\lim_{x \rightarrow +\infty} (\sin x)$$

$$= \lim_{x \rightarrow +\infty} e^{\frac{3x^2+5x}{2x^3-x}}$$

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$$= e^{\frac{3}{2}}$$