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

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

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

$$= \lim_{x\to+\infty} \frac{-2x}{x^2+3}$$

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

$$= 0 - \frac{3}{2}\cdot\frac{1}{3} = -\frac{1}{2}$$