

ex. 140

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

$$\lim_{x \rightarrow +\infty} \left(1 + \frac{1}{x} \right)^x = e$$

$$\lim_{x \rightarrow +\infty} \left(\frac{(2x-1)+4}{2x-1} \right)^{3x+4}$$

$$\begin{array}{r} 2x+3 \quad | \quad 2x-1 \\ -2x+1 \quad | \quad 1 \\ \hline \quad \quad 4 \end{array}$$

$$t = \frac{2x-1}{4}$$

$$\lim_{x \rightarrow +\infty} \left(1 + \frac{4}{2x-1} \right)^{3x+4} \rightarrow \frac{1}{\frac{2x-1}{4}}$$

$$x \rightarrow +\infty$$

$$t \rightarrow +\infty$$

$$\lim_{t \rightarrow +\infty} \left(1 + \frac{1}{t} \right)^{3\left(\frac{4t+1}{2}\right)+4}$$

$$x = \frac{4t+1}{2}$$

$$\lim_{t \rightarrow +\infty} \left(1 + \frac{1}{t} \right)^{6t + \frac{3}{2} + 4}$$

$$\lim_{t \rightarrow +\infty} \left(1 + \frac{1}{t} \right)^{6t} \cdot \left(1 + \frac{1}{t} \right)^{\frac{11}{2}} = e^6 \cdot 1 = e^6$$