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$$\lim_{n\to+\infty} \frac{\ln(6n)}{\ln(2n)}$$

Option 1: Divide by $\ln(n)$

$$\lim_{n\to+\infty} \frac{\ln 6+\ln n}{\ln 2+\ln n} \cdot \frac{\frac{1}{\ln n}}{\frac{1}{\ln n}} = \lim_{n\to+\infty} \frac{\frac{\ln 6}{\ln n}+1}{\frac{\ln 2}{\ln n}+1} = \frac{1}{1} = 1$$

($\frac{\ln 6}{\ln n} \to 0$, $\frac{\ln 2}{\ln n} \to 0$)

Option 2: L'Hopital's Rule

$$\lim_{n\to+\infty} \frac{\ln(6n)}{\ln(2n)} = \lim_{n\to+\infty} \frac{\frac{6}{6n}}{\frac{2}{2n}} = \lim_{n\to+\infty} \frac{\frac{1}{n}}{\frac{1}{n}} = 1$$

So the sequence converges to 1.