Ένα όριο για $x \to +\infty$

$$\lim_{x\to\infty} \frac{\ln(x^{4040} - 4x)}{\ln(x^2 - 2x)} =$$

$$\lim_{x\to\infty} \frac{ln\left(x^{4040}\left(1-\frac{4}{x^{4039}}\right)\right)}{ln\left(x^{2}\left(1-\frac{2}{x}\right)\right)} =$$

$$\lim_{x\to\infty} \frac{\ln(x^{4040}) + \ln\left(1 - \frac{4}{x^{4039}}\right)}{\ln(x^2) + \ln\left(1 - \frac{2}{x}\right)}$$

$$\lim_{x\to\infty} \frac{4040 \cdot lnx + ln\left(1 - \frac{4}{x^{4039}}\right)}{2lnx + ln\left(1 - \frac{2}{x}\right)} =$$

$$\lim_{x\to\infty} \frac{(\ln x)\left[4040+\frac{\ln\left(1-\frac{4}{x^{4039}}\right)}{\ln x}\right]}{(\ln x)\cdot\left[2+\frac{\ln\left(1-\frac{2}{x}\right)}{\ln x}\right]} =$$

$$\lim_{x\to\infty} \frac{\left[4040 + \dfrac{\ln\left(1 - \dfrac{4}{x^{4039}}\right)}{\ln x}\right]}{\left[2 + \dfrac{\ln\left(1 - \dfrac{2}{x}\right)}{\ln x}\right]} = \ldots =$$

$$\frac{4040+\frac{ln(1+0)}{ln(+\infty)}}{2+\frac{ln(1-0)}{ln(+\infty)}}=\frac{4040+\frac{0}{+\infty}}{2+\frac{0}{+\infty}}=2020$$