

$\frac{n^4}{6n^5 - 2} > \frac{n^4}{6n^5} = \frac{1}{6n}$ for all $n \geq 2$, so $\sum_{n=2}^{\infty} \frac{n^4}{6n^5 - 1}$ diverges by comparison with $\frac{1}{6} \cdot \sum_{n=2}^{\infty} \frac{1}{n}$, which diverges because it is a multiple of a p -series with $p = 1 \leq 1$ (the harmonic series).