

$$\textcircled{1} \quad \sum_{k=5}^{\infty} \frac{3^k + (\ln(k) + \sqrt{3k+1})}{2^k - \sin(k) - k^2} = \infty$$

Why?

Because the numerator has higher term powers and they're all added together, all numerator powers diverge to $+\infty$. This sum simply explodes.