Problem:

Determine the type of convergence of the series:

$$\sum_{n=1}^{\infty} \frac{(-1)^n 6n}{2n}.$$

Solution:

$\sum_{n=1}^{\infty} (-1)^n \frac{6^n}{2^n}$, the general term of the series does not tend to zero:

$|a_n| = \left(\frac{6}{2}\right)^n > 1 \Rightarrow |a_n| \underset{n\to\infty}{\nrightarrow} 0 \Rightarrow$ the series diverges.

Answer: diverges.