Does $\sum_{n=1}^{\infty} n^2$ diverge, converge absolutely, or converge conditionally?

Solution

Consider the limit of the sequence a_n.

$$\begin{aligned}\lim_{n\to\infty} a_n &= \lim_{n\to\infty} n^2 \\ &= \infty.\end{aligned}$$

so the series $\sum_{n=1}^{\infty} n^2$ diverges by the Test for Divergence.