We can calculate the lateral limits to see if they match

$$\lim_{n\to\infty} 0 = 0 \quad \text{and} \quad \lim_{n\to\infty} \frac{3!n}{(n-2)(n-1)} = 0.$$

$\therefore \lim_{n\to\infty} \frac{n^2}{2^n} = 0$ by the squeeze theorem.