$1 - \frac{1}{3!} + \frac{1}{5!} - \frac{1}{7!} + \cdots - \frac{1}{(2n-1)!}$

$\Rightarrow \sum (-1)^n \cdot \frac{1}{(2n-1)!} = \sum (-1)^n \cdot b_n$

th.

where $b_n = \frac{1}{(2n-1)!}$

(i)

$\lim_{n \to \infty} b_n = \lim_{n \to \infty} \frac{1}{(2n-1)!} = \frac{1}{\infty} = 0$

$\lim_{n \to \infty} b_n = 0$

(ii)

$b_n = \frac{1}{(2n-1)!}$; $b_{n+1} = \frac{1}{(2n+1)!}$

$\because (2n+1)! > (2n-1)! \quad \forall n \in \mathbb{N}$

$\Rightarrow \frac{1}{(2n+1)!} < \frac{1}{(2n-1)!}$

$\Rightarrow \frac{1}{(2n+1)!} - \frac{1}{(2n-1)!} < 0$

$\Rightarrow b_{n+1} - b_n < 0$

$\Rightarrow \underline{b_{n+1} < b_n} \Rightarrow \{b_n\}$ is monotonic

decreasing sequence so it is satisfies both condition of alternating series (lebnitz test)

$\Rightarrow$ Series is convergent