

$$\sum \frac{1 \cdot 2 \cdots n}{1 \cdot 3 \cdot 5 \cdots (2n-1)} x^{2n}$$

$$\frac{1}{R} = \lim_{n \rightarrow \infty} \left| \frac{a_{n+1}}{a_n} \right| = \lim_{n \rightarrow \infty} \left| \frac{1 \cdot 2 \cdots (n+1)}{1 \cdot 3 \cdot 5 \cdots (2n-1)(2n+1)} \times \frac{1 \cdot 3 \cdot 5 \cdots (2n-1)}{1 \cdot 2 \cdots n} \right|$$

$$\Rightarrow \lim_{n \rightarrow \infty} \left| \frac{n+1}{2n+1} \right| = \lim_{n \rightarrow \infty} \frac{1 + \frac{1}{n}}{2 + \frac{1}{n}} = \frac{1}{2}$$

$$\boxed{R = 2}$$

Converges for $x^2 < 2$

$$\Rightarrow |x| < (2)^{\frac{1}{2}}$$

Then $\boxed{\text{ROC} = 2^{\frac{1}{2}} \text{ or } \sqrt{2}}$