#9

Specifically we show why the sequence in #7

$$\left\{ \frac{2n+1}{(2n)!} \right\}_{n=1}^{+\infty} \quad \text{converges to } 0.$$

$$\frac{2n+1}{(2n)!} = \frac{2n}{(2n)!} + \frac{1}{(2n)!}$$

Note that $(2n)! = (2n)(2n-1)(2n-2) \cdots 1$
$$= (2n)(2n-1)!$$

So $\dfrac{2n+1}{(2n)!} = \dfrac{1}{(2n-1)!} + \dfrac{1}{(2n)!}$

So $\displaystyle \lim_{n \to +\infty} \frac{2n+1}{(2n)!} = \lim_{n \to +\infty} \left[\frac{1}{(2n-1)!} + \frac{1}{(2n)!} \right] = 0 + 0 = 0.$