

$$\S 11.7 \quad \# 23$$

$$\sum_{n=1}^{\infty} \tan\left(\frac{1}{n}\right)$$

Book compares  $a_n = \tan\left(\frac{1}{n}\right)$   
to  $b_n = \frac{1}{n}$

which would've taken me  
forever to try!

$$\frac{\tan\left(\frac{1}{n}\right)}{\frac{1}{n}} \xrightarrow{n \rightarrow \infty} \frac{0}{0} \quad \frac{n \rightarrow \infty}{L'H}$$

$$\frac{\frac{1}{n^2} \sec^2\left(\frac{1}{n}\right)}{-\frac{1}{n^2}} = \sec^2\left(\frac{1}{n}\right) \xrightarrow{n \rightarrow \infty} 1$$

Since  $\sum \frac{1}{n}$  Diverges, so does  $\sum \tan\left(\frac{1}{n}\right)$ .