

⑤ Suppose that

$$|f(z)| \leq 2019 |\sin(z)|$$

for all  $z \in \mathbb{C}$ , where  $f(z)$  is analytic.

We know that  $f\left(\frac{\pi}{2}\right) = 1$ . What can one say about  $f(z)$ ?

⑥ When does

$$\sum \frac{\sin(nz)}{n^2}, \quad \sum \frac{\cos(nz)}{n^2}$$

converge?