

## 習題集 12

(對應 [張旭微積分](#) 極限篇重點十二： $\lim_{x \rightarrow 0} \frac{\sin x}{x}$  專論)

1. Evaluate  $\lim_{x \rightarrow 0} 3^{x \cot x}$  and  $\lim_{x \rightarrow 0} \frac{\sin 5x}{\tan 7x}$ .
2. Evaluate  $\lim_{x \rightarrow 0} \frac{\sin(3^x - 1)}{3^{3x} - 1}$ .
3. Evaluate  $\lim_{x \rightarrow 0} \frac{\sin(2x)}{x \cos x}$ .
4. Evaluate  $\lim_{x \rightarrow 0} \frac{\sin^2 x^2}{x^3 + x \cos x}$ .
5. Evaluate  $\lim_{x \rightarrow 0} \frac{\sin x \cdot \cos x^2}{\tan x^3 \cdot \cot x^4}$ .
6. Evaluate  $\lim_{x \rightarrow 0} \frac{1 - \cos x}{\sin x^2}$ .
7. Evaluate  $\lim_{x \rightarrow \frac{\pi}{2}} \frac{\sin x - 1}{x - \frac{\pi}{2}}$ .
8. Evaluate  $\lim_{x \rightarrow 0} \frac{1 - \sqrt{\cos x}}{x}$ .
9. Evaluate  $\lim_{x \rightarrow 0} \frac{\tan x - \sin x}{x^3}$ .
10. Evaluate  $\lim_{x \rightarrow \infty} \frac{\sin(\sin(\sin x))}{x^2}$  and  $\lim_{x \rightarrow 0} \frac{\sin(\sin(\sin x))}{x}$ .