

2.5

$$\begin{aligned}
 \textcircled{4} \lim_{x \rightarrow 0} \frac{3x + \tan x}{\sin x} &= \lim_{x \rightarrow 0} \frac{3x \frac{\sin x}{\cos x}}{\sin x} \\
 &= \lim_{x \rightarrow 0} \frac{3x \sin x}{\sin x \cos x} \\
 &= \lim_{x \rightarrow 0} \frac{3x}{\cos x} \\
 &= \frac{3 \cdot 0}{1} = \frac{0}{1} = \boxed{0}
 \end{aligned}$$

$$\begin{aligned}
 \textcircled{6} \lim_{\theta \rightarrow 0} \frac{\sin 3\theta}{2\theta} &= \frac{1}{2} \lim_{\theta \rightarrow 0} \frac{\sin 3\theta}{\theta} \\
 &= \frac{1}{2} \lim_{\theta \rightarrow 0} \frac{\sin 3\theta}{\theta} \cdot \frac{3}{3} \\
 &= \frac{3}{2} \cdot \lim_{\theta \rightarrow 0} \frac{\sin 3\theta}{3\theta} \\
 &= \frac{3}{2} \cdot 1 \\
 &= \boxed{\frac{3}{2}}
 \end{aligned}$$

$$\textcircled{8} \lim_{\theta \rightarrow 0} \frac{\tan 5\theta}{\sin 2\theta} = \lim_{\theta \rightarrow 0} \frac{\frac{\sin 5\theta}{\cos 5\theta}}{\sin 2\theta}$$

$$= \lim_{\theta \rightarrow 0} \frac{\sin 5\theta}{\cos 5\theta \sin 2\theta}$$

$$= \lim_{\theta \rightarrow 0} \frac{1}{\cos 5\theta} \cdot \frac{\sin 5\theta}{1} \cdot \frac{1}{\sin 2\theta}$$

$$= \lim_{\theta \rightarrow 0} \frac{1}{\cos 5\theta} \cdot \frac{\sin 5\theta}{1} \cdot \frac{5\theta \cdot 2}{5\theta \cdot 2} \cdot \frac{1}{\sin 2\theta}$$

$$= \lim_{\theta \rightarrow 0} \frac{1}{\cos 5\theta} \cdot \frac{\sin 5\theta}{5\theta} \cdot \frac{5}{2} \cdot \frac{2\theta}{\sin 2\theta}$$

$$= \frac{5}{2} \cdot \lim_{\theta \rightarrow 0} \frac{1}{\cos 5\theta} \cdot \frac{\sin 5\theta}{5\theta} \cdot \frac{2\theta}{\sin 2\theta}$$

$$= \frac{5}{2} \cdot \frac{1}{\cos 0} \cdot 1 \cdot 1$$

$$= \frac{5}{2} \cdot 1 \cdot 1 \cdot 1$$

$$= \boxed{\frac{5}{2}}$$