

1. Use l'Hospital's rule to evaluate $\lim_{x \rightarrow 0} \frac{\sin(7x)}{\sin(5x)}$

Note $\lim_{x \rightarrow 0} \frac{\sin(7x)}{\sin(5x)}$ gives indeterminate form $\frac{0}{0}$

So by l'Hospital's Rule,

$$\lim_{x \rightarrow 0} \frac{\sin(7x)}{\sin(5x)} = \lim_{x \rightarrow 0} \frac{7 \cos(7x)}{5 \cos(5x)} = \frac{7 \cdot 1}{5 \cdot 1} = \frac{7}{5}$$