

## Bentuk Dasar Limit Trigonometri

### Teori Dasar

- |   |   |   |
|---|---|---|
| 1. $\lim_{x \rightarrow 0} \frac{\sin ax}{bx} = \frac{a}{b}$      | 4. $\lim_{x \rightarrow 0} \frac{\tan ax}{bx} = \frac{a}{b}$      | 7. $\lim_{x \rightarrow 0} \frac{\sin ax}{\tan bx} = \frac{a}{b}$ |
| 2. $\lim_{x \rightarrow 0} \frac{ax}{\sin bx} = \frac{a}{b}$      | 5. $\lim_{x \rightarrow 0} \frac{ax}{\tan bx} = \frac{a}{b}$      |   |
| 3. $\lim_{x \rightarrow 0} \frac{\sin ax}{\sin bx} = \frac{a}{b}$ | 6. $\lim_{x \rightarrow 0} \frac{\tan ax}{\tan bx} = \frac{a}{b}$ |   |

### Contoh

$$\begin{aligned}\lim_{x \rightarrow 0} \frac{x^2 \sin 3x}{\tan^3 4x} &= \lim_{x \rightarrow 0} \frac{x}{\tan 4x} \cdot \lim_{x \rightarrow 0} \frac{x}{\tan 4x} \cdot \lim_{x \rightarrow 0} \frac{\sin 3x}{\tan 4x} \\ &= \frac{1}{4} \cdot \frac{1}{4} \cdot \frac{3}{4} \\ &= \frac{3}{64}\end{aligned}$$

### Latihan

Tentukan nilai limit di bawah ini!

Petunjuk: Jawaban ditulis dalam bentuk pecahan paling sederhana

$$1. \lim_{x \rightarrow 0} \frac{3x}{\sin 5x} = \frac{\dots}{\dots}$$

$$2. \lim_{x \rightarrow 0} \frac{\sin 6x}{2x} = \dots$$

$$3. \lim_{x \rightarrow 0} \frac{8x}{3 \tan 2x} = \frac{\dots}{\dots}$$

$$4. \lim_{x \rightarrow 0} \frac{\tan 3x}{9x} = \frac{\dots}{\dots}$$

$$5. \lim_{x \rightarrow 0} \frac{2 \sin 4x}{5 \tan 2x} = \frac{2}{5} \cdot \lim_{x \rightarrow 0} \frac{\sin 4x}{\tan 2x}$$

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

$$= \frac{\dots}{\dots}$$

$$6. \lim_{x \rightarrow 0} \frac{2 \tan 5x}{7 \tan 4x} = \frac{\dots}{\dots}$$

$$7. \lim_{x \rightarrow 0} \frac{x \tan 5x}{\sin 3x \tan 2x} = \lim_{x \rightarrow 0} \frac{x}{\sin 3x} \cdot \lim_{x \rightarrow 0} \frac{\tan 5x}{\tan 2x}$$

$$= \frac{\dots}{\dots} \cdot \frac{\dots}{\dots}$$

$$= \frac{\dots}{\dots}$$

$$8. \lim_{x \rightarrow 0} \frac{x^2 \sin 3x}{\tan^3 4x} = \lim_{x \rightarrow 0} \frac{x}{\tan 4x} \cdot \lim_{x \rightarrow 0} \frac{\sin 3x}{\tan 4x} \cdot \lim_{x \rightarrow 0} \frac{\sin 3x}{\tan 4x}$$

$$= \frac{\dots}{\dots} \cdot \frac{\dots}{\dots} \cdot \frac{\dots}{\dots}$$

$$= \frac{\dots}{\dots}$$