
Bentuk Dasar Limit Trigonometri

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$$1. \lim_{x \rightarrow 0} \frac{\sin ax}{bx} = \frac{a}{b}$$

$$4. \lim_{x \rightarrow 0} \frac{\tan ax}{bx} = \frac{a}{b}$$

$$7. \lim_{x \rightarrow 0} \frac{\sin ax}{\tan bx} = \frac{a}{b}$$

$$2. \lim_{x \rightarrow 0} \frac{ax}{\sin bx} = \frac{a}{b}$$

$$5. \lim_{x \rightarrow 0} \frac{ax}{\tan bx} = \frac{a}{b}$$

$$3. \lim_{x \rightarrow 0} \frac{\sin ax}{\sin bx} = \frac{a}{b}$$

$$6. \lim_{x \rightarrow 0} \frac{\tan ax}{\tan bx} = \frac{a}{b}$$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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