

LEMBAR KERJA PESERTA DIDIK MATEMATIKA TINGKAT LANJUT SMAN 1 PALIMANAN

PERTEMUAN KE 5 (LIMA) LIMIT FUNGSI

Kelompok ke :

Ketua Kelompok :

Anggota 1.

2.

3.

4.

5.

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

Jika $x \rightarrow 0$ maka $bx \rightarrow 0$ dan $ax \rightarrow 0$

$$\begin{aligned}\lim_{x \rightarrow 0} \frac{ax}{\sin bx} &= \lim_{x \rightarrow 0} \frac{ax}{\sin bx} \cdot 1 \\&= \lim_{x \rightarrow 0} \frac{ax}{\sin bx} \cdot \frac{bx}{bx} \\&= \lim_{x \rightarrow 0} \frac{ax}{\sin bx} \cdot \frac{1}{\frac{bx}{ax}} \\&= \lim_{x \rightarrow 0} \frac{ax}{\sin bx} \cdot \frac{1}{\frac{bx}{ax}} \\&= \lim_{bx \rightarrow 0} \frac{ax}{\sin bx} \\&= \frac{a}{b} \cdot \lim_{bx \rightarrow 0} \frac{bx}{\sin bx} \\&= \frac{a}{b} \cdot 1 \\&= \frac{a}{b}\end{aligned}$$

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

$$2. \lim_{x \rightarrow 0} \frac{\tan ax}{bx} = \lim_{x \rightarrow 0} \frac{\tan ax}{bx}$$

Jika $x \rightarrow 0$ maka $ax \rightarrow 0$ dan $bx \rightarrow 0$

$$\begin{aligned} \lim_{x \rightarrow 0} \frac{\tan ax}{bx} &= \lim_{x \rightarrow 0} \frac{\tan ax}{bx} \cdot 1 \\ &= \lim_{x \rightarrow 0} \frac{\tan ax}{bx} \cdot \frac{ax}{ax} \\ &= \lim_{x \rightarrow 0} \frac{\tan ax}{ax} \cdot \frac{ax}{bx} \\ &= \lim_{x \rightarrow 0} \frac{\tan ax}{ax} \cdot \frac{ax}{bx} \\ &= \lim_{ax \rightarrow 0} \frac{\tan ax}{ax} \cdot \frac{ax}{bx} \\ &= \lim_{ax \rightarrow 0} \frac{\tan ax}{ax} \cdot \frac{ax}{bx} \end{aligned}$$

$$\lim_{x \rightarrow 0} \frac{\tan ax}{bx} = \frac{1}{b}$$

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

Jika $x \rightarrow 0$ maka $ax \rightarrow 0$ dan $bx \rightarrow 0$

$$\begin{aligned} \lim_{x \rightarrow 0} \frac{\sin ax}{\tan bx} &= \lim_{x \rightarrow 0} \frac{\sin ax}{\tan bx} \cdot 1 \\ &= \lim_{x \rightarrow 0} \frac{\sin ax}{\tan bx} \cdot \frac{bx}{bx} \\ &= \lim_{x \rightarrow 0} \frac{\sin ax}{\tan bx} \cdot \frac{bx}{bx} \\ &= \lim_{x \rightarrow 0} \frac{\sin ax}{\tan bx} \cdot \frac{bx}{bx} \end{aligned}$$

$$= \lim_{x \rightarrow 0} \frac{\sin ax}{ax} \cdot \frac{ax}{bx} \cdot \frac{bx}{\tan bx}$$

$$= \frac{a}{b} \cdot \lim_{ax \rightarrow 0} \frac{\sin ax}{ax} \cdot \lim_{bx \rightarrow 0} \frac{bx}{\tan bx}$$

$$= \frac{a}{b} \cdot 1 \cdot 1$$

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