

Tugas Limit Fungsi Trigonometri

1. Nilai $\lim_{x \rightarrow 0} \frac{\sin 4x}{\tan -5x}$ adalah...

$$\begin{aligned} &= \lim_{x \rightarrow 0} \frac{\sin 4x}{\tan -5x} = \lim_{x \rightarrow 0} \frac{\frac{\sin 4x}{x}}{\frac{\tan -5x}{x}} \\ &= \frac{4}{-5} \end{aligned}$$

2. Nilai $\lim_{x \rightarrow 0} \frac{\sin 7x}{3x - \tan 2x}$ adalah...

$$\begin{aligned} &= \lim_{x \rightarrow 0} \frac{\frac{\sin 7x}{x}}{\frac{3x}{x} - \frac{\tan 2x}{x}} \\ &= \frac{7}{3-2} \\ &= \frac{7}{1} = 7 \end{aligned}$$

3. Nilai $\lim_{x \rightarrow 0} \frac{\sin 4x + 6x}{\sin 2x}$ adalah...

$$\begin{aligned} &= \lim_{x \rightarrow 0} \frac{\sin 4x + 6x}{\sin 2x} \\ &= \lim_{x \rightarrow 0} \frac{\frac{\sin 4x}{x} + \frac{\sin 6x}{x}}{\frac{\sin 2x}{x}} \end{aligned}$$

lanjut \rightarrow



$$\square = \frac{4+6}{2}$$

$$\square = \frac{10}{2} = 5$$

4. Nilai $\lim_{x \rightarrow 1} \frac{(x^2 - 1) \sin 2(x-1)}{-2 \sin^2(x-1)}$ adalah...

$$\square = \lim_{x \rightarrow 1} \frac{(x-1)(x+1) \sin 2(x-1)}{-2 \sin(x-1) \sin(x-1)}$$

$$\square = \lim_{x \rightarrow 1} \frac{(x+1)}{-2} \cdot \frac{(x-1)}{\sin(x-1)} \cdot \frac{\sin 2(x-1)}{(x-1)}$$

$$\square = \frac{(1+1)}{-2} \cdot 1 \cdot 2$$

$$\square = \frac{2}{-2} \cdot 2$$

$$\square = -2 //$$

5. Nilai $\lim_{x \rightarrow \frac{\pi}{2}} (x - 2x) \tan x$ adalah...

$$\square = \lim_{x \rightarrow \frac{\pi}{2}} (x - 2x) \tan x$$

$$\square = \lim_{x \rightarrow \frac{\pi}{2}} (x - 2x) \frac{\sin x}{\cos x}$$

$$\square = \lim_{x \rightarrow \frac{\pi}{2}} \sin x \frac{(x - 2x)}{\cos x}$$

✖ $\lim_{x \rightarrow \frac{\pi}{2}} \sin x$

$x \rightarrow \frac{\pi}{2}$

$\sin \frac{\pi}{2} = \sin \frac{180}{2} = \sin 90 = 1$

✖ $\lim_{x \rightarrow \frac{\pi}{2}} \frac{\pi - 2x}{\cos x} \rightarrow$ Hurufan $\pi - 2x = -2$

\rightarrow Hurufan $\cos x = -\sin x$

✖ $1. \lim_{x \rightarrow \frac{\pi}{2}} \frac{-2}{-\sin x}$

$= 1. \lim_{x \rightarrow \frac{\pi}{2}} \frac{2}{\sin x}$

$= 1. \frac{2}{1} = \underline{\underline{2}}$