

Kelas : _____

Nama : _____

LEMBAR KERJA 1 TURUNAN TRIGONOMETRI



Limit Turunan Trigonometri

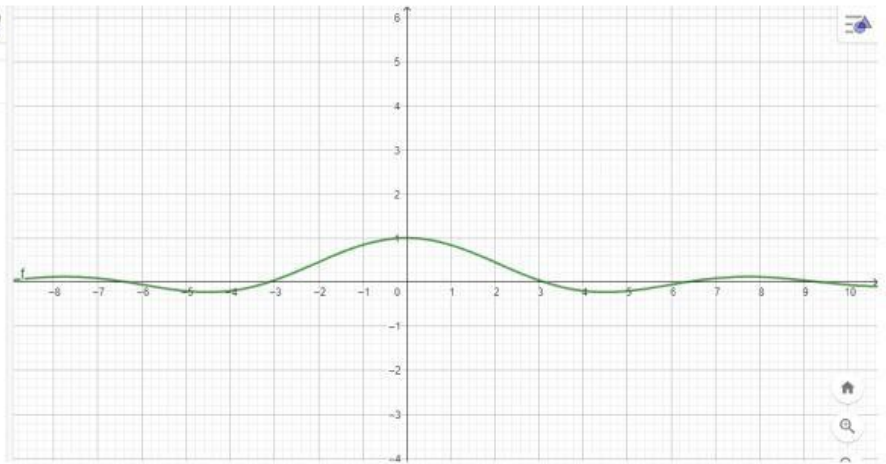
A. LIMIT TRIGONOMETRI

1) Limit sinus bentuk 1

$$f(x) = \frac{\sin(x)}{x}$$

Input...

EV



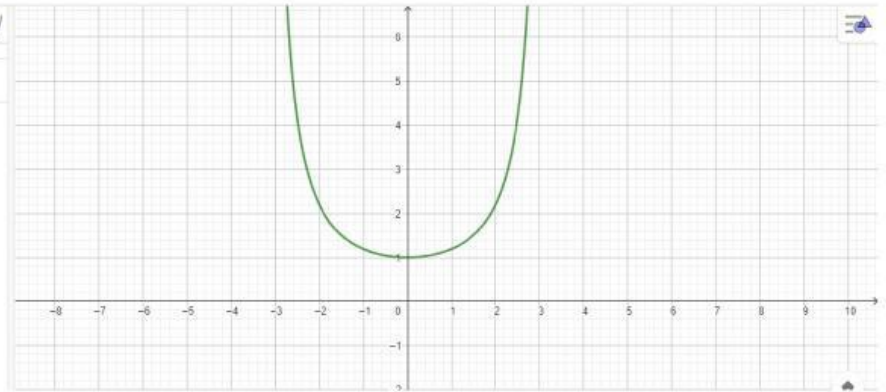
$$\lim_{x \rightarrow 0} \frac{\sin x}{x} = \dots$$

2) Limit sinus bentuk 2

$$f(x) = \frac{x}{\sin(x)}$$

Input...

EV

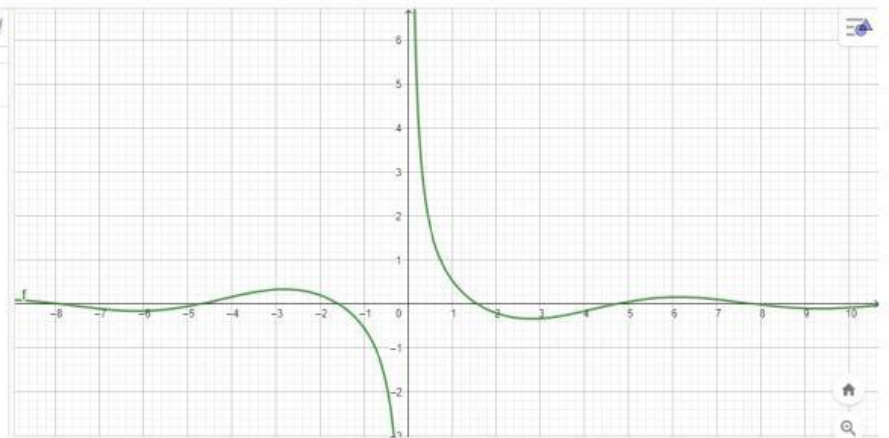


$$\lim_{x \rightarrow 0} \frac{x}{\sin x} = \dots$$

3) Limit cosinus bentuk 1

$$f(x) = \frac{\cos(x)}{x}$$

Input...

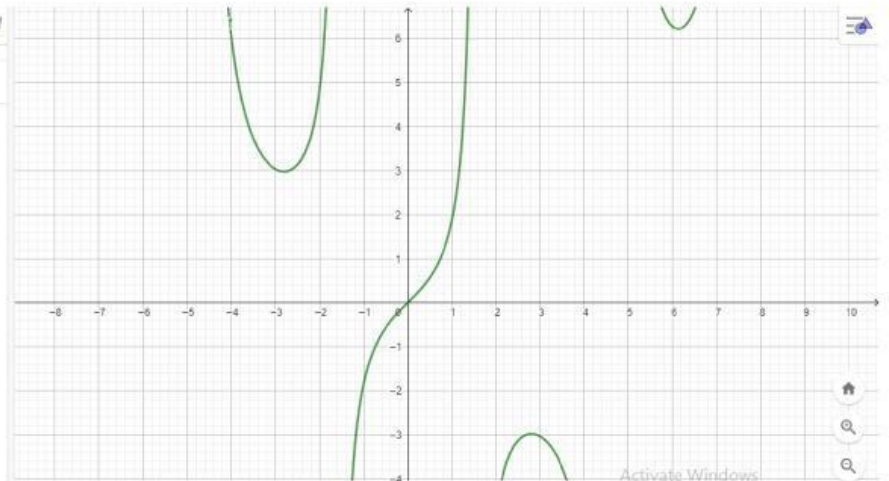


$$\lim_{x \rightarrow 0} \frac{\cos x}{x} = \dots$$

4) Limit cosinus bentuk 2

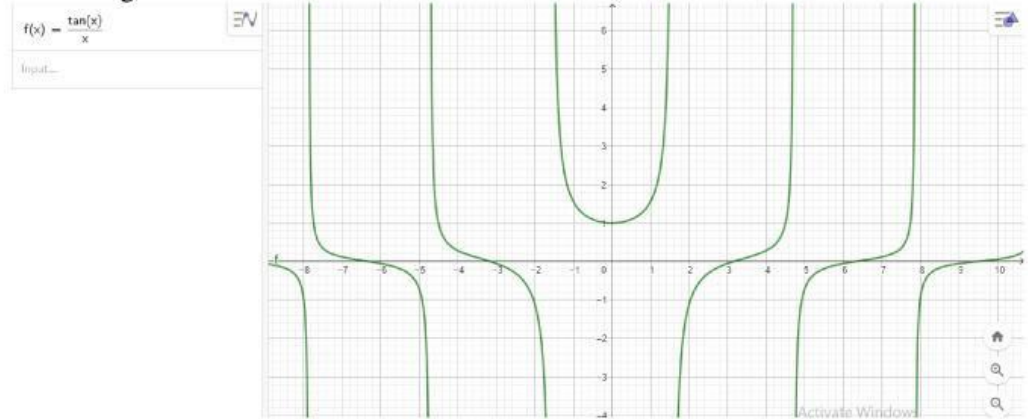
$$f(x) = \frac{x}{\cos(x)}$$

Input...



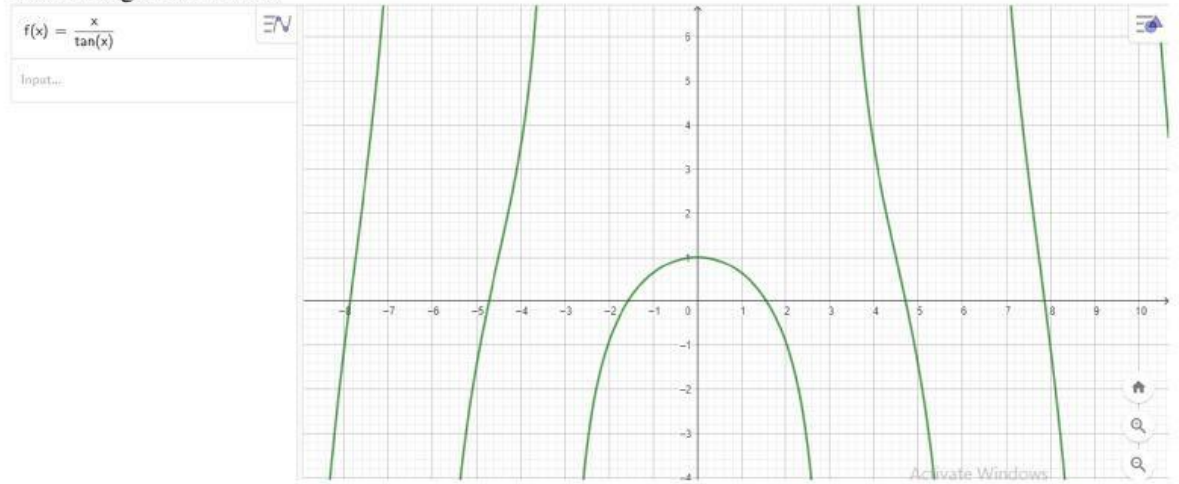
$$\lim_{x \rightarrow 0} \frac{x}{\cos x} = \dots$$

5) Limit tangen bentuk 1



$$\lim_{x \rightarrow 0} \frac{\tan x}{x} = \dots$$

6) Limit tangen bentuk 2



$$\lim_{x \rightarrow 0} \frac{x}{\tan x} = \dots$$

B. LIMIT TURUNAN TRIGONOMETRI

1) Turunan sinus

$$f(x) = \sin x$$

$$f'(x) = \lim_{h \rightarrow 0} \frac{f(x+h) - f(x)}{h}$$

$$= \lim_{h \rightarrow 0} \frac{\sin(x+h) - \sin(x)}{h}$$

$$= \lim_{h \rightarrow 0} \frac{2 \dots\dots\dots \left(\frac{(\dots\dots\dots) + \dots\dots}{2} \right) \dots\dots\dots \left(\frac{(\dots\dots\dots) - \dots\dots}{2} \right)}{h}$$

$$= \lim_{h \rightarrow 0} \frac{2 \dots\dots\dots \left(\frac{\dots\dots\dots}{2} \right) \dots\dots\dots \left(\frac{\dots\dots\dots}{2} \right)}{h}$$

$$= \lim_{h \rightarrow 0} \dots\dots\dots \left(\frac{\dots\dots\dots}{2} \right) \cdot \lim_{h \rightarrow 0} \frac{2 \cdot \sin \left(\frac{\dots\dots\dots}{2} \right)}{h} \cdot \left(\frac{\left(\frac{\dots\dots\dots}{2} \right)}{\left(\frac{\dots\dots\dots}{2} \right)} \right)$$

$$= \dots\dots\dots \left(\frac{\dots\dots + \dots\dots}{2} \right) \cdot 1$$

$$= \dots\dots\dots \left(\frac{\dots\dots\dots}{2} \right)$$

$$= \dots\dots\dots$$

2) Turunan cosinus

$$f(x) = \cos x$$

$$f'(x) = \lim_{h \rightarrow 0} \frac{f(x+h) - f(x)}{h}$$

$$= \lim_{h \rightarrow 0} \frac{\cos(x+h) - \cos(x)}{h}$$

$$= \lim_{h \rightarrow 0} \frac{2 \sin\left(\frac{(x+h) - x}{2}\right) \cos\left(\frac{(x+h) + x}{2}\right)}{h}$$

$$= \lim_{h \rightarrow 0} \frac{2 \sin\left(\frac{h}{2}\right) \cos\left(\frac{2x+h}{2}\right)}{h}$$

$$= \lim_{h \rightarrow 0} \sin\left(\frac{h}{2}\right) \cdot \lim_{h \rightarrow 0} \frac{2 \cos\left(\frac{2x+h}{2}\right)}{h} \cdot \lim_{h \rightarrow 0} \left(\frac{h}{2}\right)$$

$$= \sin\left(\frac{h}{2}\right) \cdot 1$$

$$= \sin\left(\frac{h}{2}\right)$$

$$= \dots\dots\dots$$

3) Turunan tangen

$$f(x) = \tan x = \frac{u}{v}$$

$$u = \dots\dots\dots \rightarrow u' = \dots\dots\dots$$

$$v = \dots\dots\dots \rightarrow v' = \dots\dots\dots$$

$$f'(x) = \frac{u'v - uv'}{v^2}$$

$$= \frac{(\dots\dots\dots)(\dots\dots\dots) - (\dots\dots\dots)(\dots\dots\dots)}{(\dots\dots\dots)^2}$$

$$= \frac{(\dots\dots\dots)^2 \dots\dots\dots (\dots\dots\dots)^2}{(\dots\dots\dots)^2}$$

$$= \frac{\dots\dots\dots}{(\dots\dots\dots)^2}$$

$$= (\dots\dots\dots)^2$$