



Nama : _____
Kelas : _____

LKPD Identitas Trigonometri



Ayo Mengumpulkan Informasi

1. Rumus – rumus yang perlu dipahami:
a. Rumus Dasar yang merupakan Kebalikan

$$\begin{aligned} * \csc \alpha &= \frac{1}{\sin \alpha} \\ * \sec \alpha &= \frac{1}{\cos \alpha} \\ * \cot \alpha &= \frac{1}{\tan \alpha} \end{aligned}$$

- b. Rumus Dasar yang merupakan hubungan perbandingan

$$\begin{aligned} * \tan \alpha &= \frac{\sin \alpha}{\cos \alpha} \\ * \cot \alpha &= \frac{\cos \alpha}{\sin \alpha} \end{aligned}$$

- c. prema phytagoras

$$\begin{aligned} \otimes \cos^2 \alpha + \sin^2 \alpha &= 1 \\ \otimes 1 + \tan^2 \alpha &= \sec^2 \alpha \\ \otimes 1 + \cot^2 \alpha &= \csc^2 \alpha \end{aligned}$$

Contoh:

Buktikan identitas berikut:

- a. $\sin \alpha \cdot \cos \alpha \cdot \tan \alpha = (1 - \cos \alpha) (1 + \cos \alpha)$

Jawab:

$$\begin{aligned} \text{Ruas kiri: } & \sin \alpha \cdot \cos \alpha \cdot \tan \alpha \\ &= \sin \alpha \cdot \cos \alpha \cdot \frac{\sin \alpha}{\cos \alpha} \\ &= \sin^2 \alpha \\ &= 1 - \cos^2 \alpha = (1 - \cos \alpha) (1 + \cos \alpha) \text{ (Terbukti)} \end{aligned}$$

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b. $\sin \beta \cdot \tan \beta + \cos \beta = \sec \beta$

Jawab:

$$\begin{aligned} \text{Ruas Kiri: } & \sin \beta \cdot \tan \beta + \cos \beta \\ &= \sin \beta \cdot \frac{\sin \beta}{\cos \beta} + \cos \beta \\ &= \frac{\sin^2 \beta}{\cos \beta} + \frac{\cos^2 \beta}{\cos \beta} \\ &= \frac{\sin^2 \beta + \cos^2 \beta}{\cos \beta} \\ &= \frac{1}{\cos \beta} = \sec \beta \text{ (Terbukti)} \end{aligned}$$

Latihan Soal:

Sederhanakan bentuk berikut:

1.	$(1 - \sin^2 x)(1 + \tan^2 x)$	$\cos^2 x \cdot \sec^2 x$
	=	$\cos^2 x \cdot \frac{\sin^2 x}{\cos^2 x}$
	=	$1 - \cos^2 x$
	=	$\cos^2 x \cdot \frac{1}{\cos^2 x}$
2	$(1 - \sin^2 x) \tan^2 x$	$\sin^2 x$
	=	1
	=	$\frac{\sin x}{\cos x} + \frac{\cos x}{1 + \sin x}$
	=	$\frac{\frac{\cos x + 1}{\cos x}}{\frac{\sin x + \sin x \cdot \cos x}{\cos x}}$
3	$\frac{1 + \sec x}{\tan x + \sin x}$	$\frac{\sin x(1 + \sin x) + \cos^2 x}{\cos x(1 + \sin x)}$
	=	$\frac{1}{\cos x}$
	=	$\csc x$
	=	$\frac{1 + \frac{1}{\cos x}}{\frac{\sin x}{\cos x} + \sin x}$

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	=	$\frac{\frac{\cos x + 1}{\cos x}}{\sin x(1 + \cos x)}$
	=	$\frac{\cos x}{\sin x + \sin^2 x + \cos^2 x}$ $\cos x(1 + \sin x)$
4	$\tan x + \frac{\cos x}{1 + \sin x}$	$\sec x$
	=	$\frac{1}{\sin x}$
	=	$\frac{\sin x + 1}{\cos x(1 + \sin x)}$
	=	
	=	
	=	

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