LEMBAR KERJA PESERTA DIDIK

Turunan fungsi tangen, kotangen, secan dan kosecan

Nama Anggota Kelompok :

1.

2.

3.

4.

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Indikator Ketercapaian Kompetensi

1. **Memahami Turunan Fungsi Tangen, Kotangen, Secan dan Kosecan**
2. **Menyelesaikan soal Turunan Fungsi Fungsi Tangen, Kotangen, Secan dan Kosecan**

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A. Turunan Fungsi Tangen

$$y = f(x) = \tan x = \frac{\sin x}{\cos x} \quad dengan\ x\ dalam\ radian$$

u = sin x $\Rightarrow$ u' = ...

v = cos x $\Rightarrow$ v' = ...

Maka :

$$y' = \frac{u'v - uv'}{v^2} = \frac{(.....)(.....) - (.....)(.....)}{(.....)^2}$$

$$= \frac{(.....)^2 + (.....)^2}{(.....)^2} = \frac{.....}{(.....)^2} = \left(\frac{.....}{.....}\right)^2$$

$$y' = (.....)^2 = ...^2 x$$

B. Turunan Fungsi Kotangen

$$y = f(x) = \cot x = \frac{\cos x}{\sin x} \quad dengan\ x\ dalam\ radian$$

u = cos x $\Rightarrow$ u' = ...

v = sin x $\Rightarrow$ v' = ...

Maka :

$$y' = \frac{u'v - uv'}{v^2} = \frac{(.....)(.....) - (.....)(.....)}{(.....)^2}$$

$$= \frac{-(.....)^2 - (.....)^2}{(.....)^2} = -\frac{.....}{(.....)^2} = -\left(\frac{.....}{.....}\right)^2$$

$$y' = -(.....)^2 = -.....^2 x$$

c. Turunan Fungsi Secan

$$y = f(x) = \sec x = \frac{1}{\cos x} \quad dengan\ x\ dalam\ radian$$

u = 1 $\Rightarrow$ u' = ...

v = cos x $\Rightarrow$ v' = ...

Maka :

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

$$= \frac{.....}{.....^2 x} = \frac{.....}{.....}\left(\frac{1}{.....}\right)$$

$$y' = ...\cdot.....$$

D. Turunan Fungsi Kosecan

$$y = f(x) = \text{cosec}x = \frac{1}{\sin x} \quad dengan\ x\ dalam\ radian$$

u = 1 $\Rightarrow$ u' = ...

v = sin x $\Rightarrow$ v' = ...

Maka :

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

$$= -\frac{.....}{.....^2 x} = -\frac{.....}{.....}\left(\frac{1}{.....}\right)$$

$$y' = -.....\cdot.....$$

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LATIHAN

1. Tentukan turunan dari :

   a. $y = \tan x - \cot x$

   b. $f(t) = \sec t - \operatorname{cosec} 3t$

2. Jika $f(x) = \tan x - \cot x$ maka tentukan $f'(45^\circ)$

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Jawaban

1. a. $y = \tan x - \cot x$

b. $f(t) = \sec t - \operatorname{cosec} t$